

Western Industry

March
1958

Vol. XXIII No. 3

Saving pennies can mean
your survival . . . p. 33

Your guide to the

**Electrical maintenance
conference-show.. p. 36**

plus

Yours for the asking

**90 best manuals on
electrical motors
and controls . . . p. 56**

EIGHT PAGES

. . . detailing "What It Is," "What It Can Do For You," "Putting It In Your Plant"

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DIRECTORY

. . . listing 150 sales outlets in the West . . .

25 MANUALS

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A Special **Western Industry Report**

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It Puts Profits In Your Pockets

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- \$—Boosts production volume
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- \$—Saves on inventory spending
- \$—Reduces rework and rejects
- \$—Adds life to all equipment
- \$—Lowers absenteeism
- \$—Pushes down cleaning and maintenance expenses
- \$—Reduces accident rates
- \$—Cuts initial building costs
- \$—Makes buildings last longer
- \$—Just plain helps everyone in your plant—including you—in feel better and work better

**Your Newest Production Tool—
Indoor Climate "On Demand"**

Conditioned Air is a production tool that can help you increase profits and reduce costs. It can help you increase production volume, improve product quality, reduce rejects, extend equipment life, lower absenteeism, and cut down on cleaning and maintenance expenses. It can help you reduce accident rates, cut initial building costs, and make buildings last longer. Just plain helps everyone in your plant—including you—in feel better and work better.

. . . Section starts on page 43 . . . !

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SAVE UP TO 40¢ ON EVERY BUILDING DOLLAR

The miracle of mass-production and standardized design puts you in a new Soulé Steel Building at big savings. Initial cost is low. Erection is in days rather than months, saving you time and money. And because clear-span design gives you maximum usable interior space, you get more value for your building dollar. Investigate miracle steel frame Soulé Buildings today!

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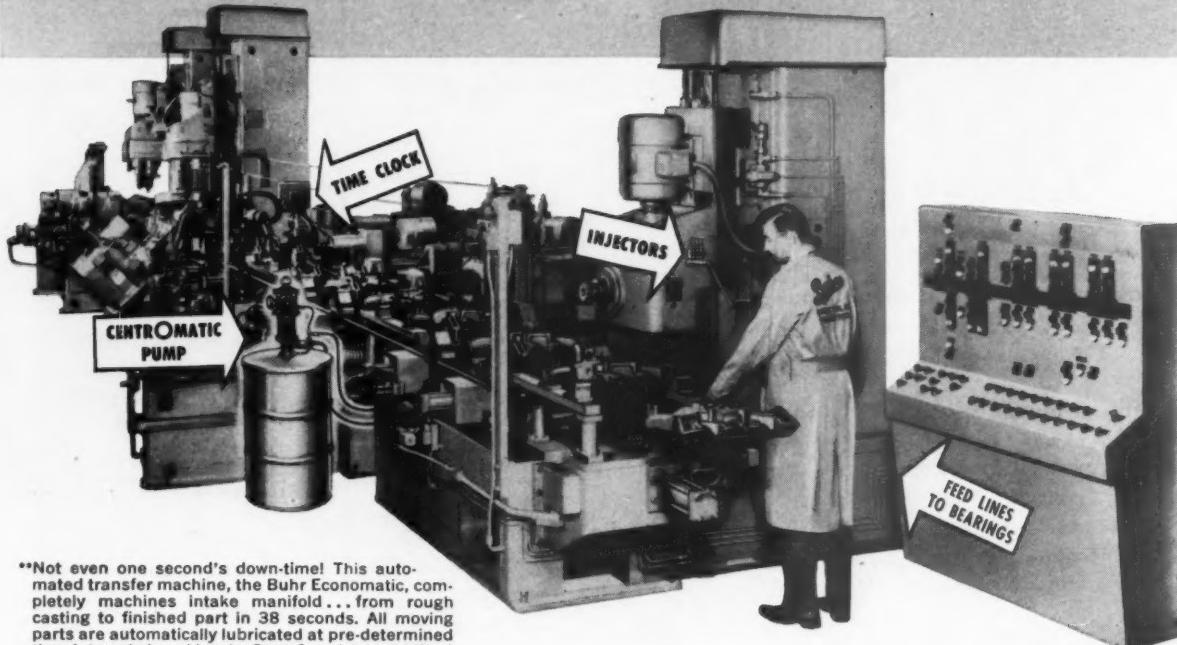
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MARCH, 1958
Vol. XXIII, No. 3

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L. V. Wilson

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Are you paying more than you should for your packaging? Heavyweight jobs formerly requiring costlier materials are now taken in stride by corrugated boxes. Packaging like this calls for versatile materials, ingenious engineering. Gaylord has done it—time after time.

You can profit from the savings that heavy-duty corrugated boxes can deliver. Call your nearby Gaylord packaging engineer.

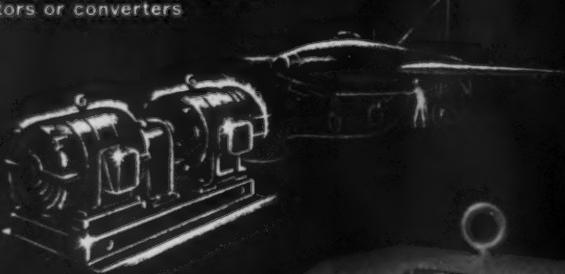
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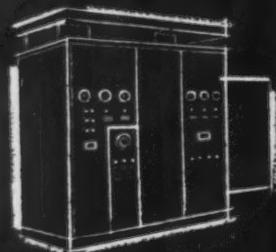
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1 Precise high-frequency drives for generators or converters



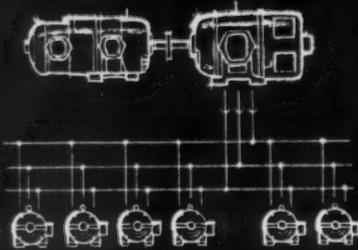
2 Precise timing, metering, and recording devices



3 Constant single- or multi-speed conveyor drives



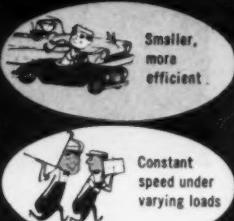
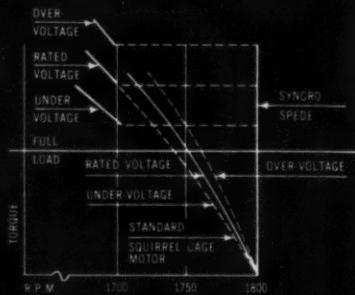
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6 High speed — high frequency operation



5 Any constant speed requirement



Smaller,
more
efficient

Constant
speed under
varying loads

The Louis Allis Syncro-Spede ...

a synchronous motor built in the same NEMA frames as standard motors of equal horsepower!

It's compact, simple, versatile . . . and trouble-free!

The remarkable Louis Allis Syncro-Spede® Motor enables you to provide exact synchronous speed for *any* application for less cost — with fewer controls — and in less space than previously possible.

If your equipment or operation calls for precise constant speed, check the advantages this new motor offers you: *Space-saving design* — The revolutionary Syncro-Spede needs no external excitation, wound rotating fields, collector rings or brushes. It's built in the same standard NEMA frames as ordinary induction motors of equal horsepower. It requires less space — is virtually maintenance-free.

Wide range of enclosures — The Syncro-Spede can be provided in a wide variety of enclosures to meet special operating requirements. For example, Syncro-Spede is

readily available in totally-enclosed fan-cooled and explosion proof enclosures — thus permitting installations which were difficult to make with D.C. excited synchronous motors.

Unmatched versatility — Syncro-Spede is available in standard sizes up to 100 hp, and even larger ratings for special applications. It can also be furnished in a wide range of mechanical modifications . . . base- or flange-mounted—as a gearmotor or brakemotor—even as a rolled-shell shaftless motor for "built-in" applications.

For full particulars and expert application engineering help, contact your local Louis Allis District Office. Or write for Bulletin No. 1900 to The Louis Allis Co., 438 East Stewart Street, Milwaukee 1, Wisconsin.

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MANUFACTURER OF ELECTRIC MOTORS AND ADJUSTABLE SPEED DRIVES
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Put down only 25% in Cash!

Styled to prove that metal buildings can be attractive

Now, with a Stran-Steel building get all the space you need . . . and hold on to your working capital. Get eye appealing design unmatched in metal buildings. Valuable counseling service custom plans it to your specific needs. So feel "cash-free" to start today . . . even your lot need not be paid for.

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Phone: Fireside 2-7591

LANCASTER, CALIF.
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43847 N. Division
Phone: WHitehall 2-9551

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Phones: HE. 7-0451 • NE. 6-1753

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610 Columbia Building
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The most complete line of filtration equipment— engineered to meet the requirements of hundreds of products

By concentrating on filtration engineering and manufacturing exclusively for over 30 years, Sparkler is able to offer a solution to practically all filtration problems without expensive experimentation.

Standard filter models available for:

Chemicals	Electroplating	Varnish
Pharmaceuticals	Petro Chemicals	and Lacquers
Beer,	Petroleum Derivatives	Hydraulic Oil
Whiskey, Wines	Food Products	Steam Condensate

and many other products in addition to large volume water filtration for municipal and plant use. Personal service on all filter installations.

West Coast Branch, Sparkler Manufacturing Co., 8479 State Street, South Gate, California. Phone: LOrain 7-0557
Berkley Office, 2729 San Pablo Ave., Berkley 2, Calif. Phone: THornwell 5-7470

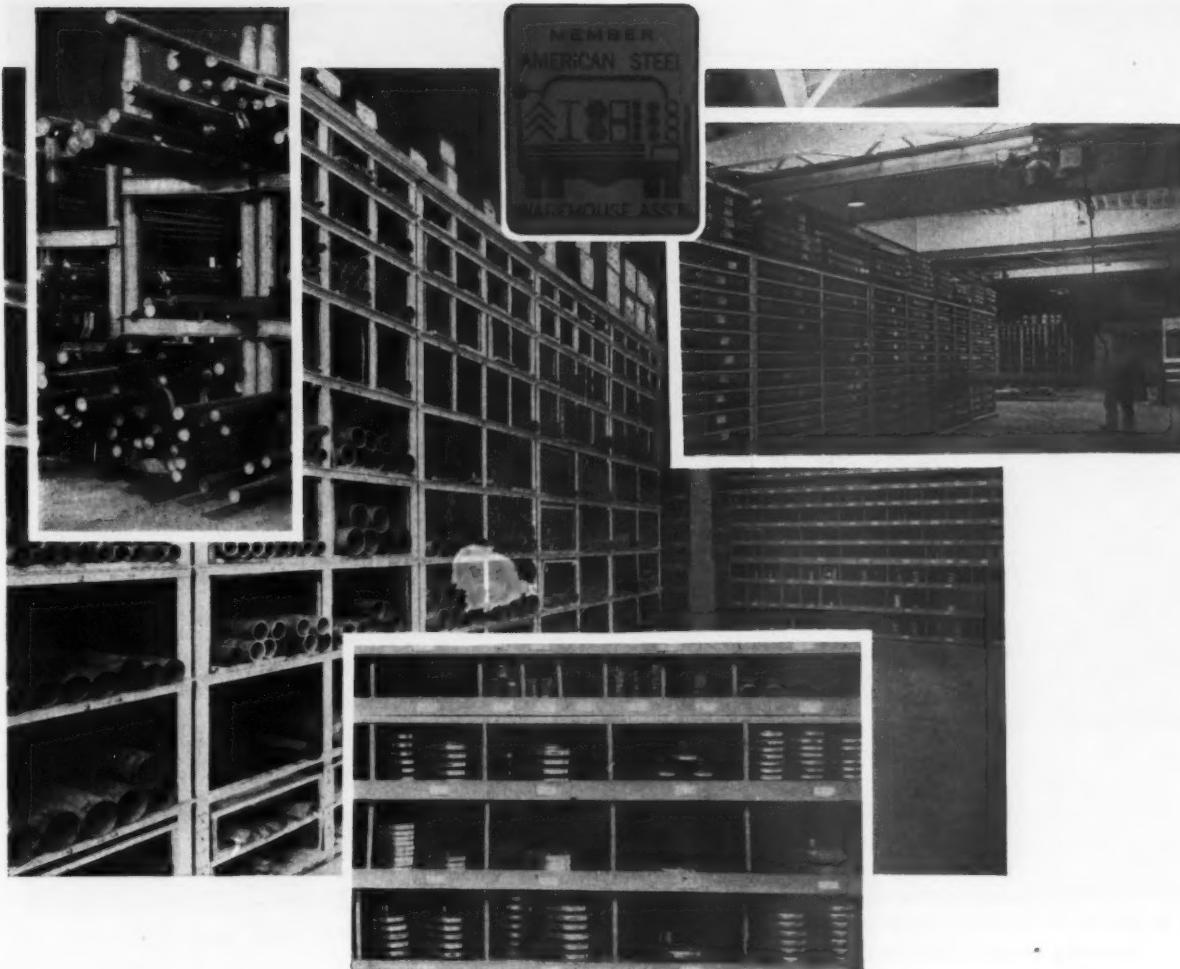
Home Office, Mundelein, Ill.

Sparkler International Ltd. Plants in Canada, Holland, Italy, Australia. ★ Service representatives in principal cities throughout the world.

SPARKLER
MANUFACTURING CO.
MUNDELEIN, ILL.

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WESTERN INDUSTRY — March 1958



STAINLESS A-2-Z

EVERYTHING IN STAINLESS
 SHEET • PLATE • BAR • WIRE
 PIPE • TUBING • FITTINGS
 FASTENINGS • VALVES • PLASTICS



**ELECTRIC STEEL
FOUNDRY COMPANY**
 2141 N. W. 25TH AVENUE
 PORTLAND 10, OREGON

A new alloy? No... just a quick way of saying, "For everything—**EVERYTHING**—in stainless steel, call **ESCO**!" There's a completely stocked **ESCO** warehouse near you.

You save money, effort and floor space by relying on **ESCO** to stock your Stainless Steel Requirements. And you're always assured of a constant supply of widely diversified products when you need it.

Check the list at the left for your stainless steel needs in 300 and 400 series, Hastelloys*, Carpenter 20, precipitation hardening grades and polyvinyl chloride (PVC) plastics, too. You'll find that for everything—**EVERYTHING**—in stainless steel, it's best to call **ESCO**.

*Haynes-Stellite Licensee

Call your nearest **ESCO** Warehouse

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HONOLULU, T. H.....	630 South Queen Street, 6-6186

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For 7 years
the same pump has
been lifting water
1/4 MILE!

THE ROYAL GORGE BRIDGE
AND AMUSEMENT CORPORATION

Canon City, Colorado



Food Machinery and Chemical Corporation
John Bean Division
San Jose 3, California

Gentlemen:

After seven years of continuous operation, I thought you would be interested in a progress report on two of your John Bean Industrial pumps.

These Bean Royal 35 pumps were installed to supply the entire water requirements of our facilities and of the 466,000 tourists visiting Royal Gorge during the Season, pumping 1550 feet from the Arkansas River to our tanks at 1053 feet higher elevation.

The water is very abrasive and our demand has increased 700 per cent since the installation in 1950, but one pump still handles most of the job, with the other available for standby and peak load.

It is obvious that in this type of operation, dependability is essential. These pumps have given us just that, far exceeding both our expectations and the performance of equipment previously used. Needless to say, we are wholeheartedly sold on Bean pumps.

Cordially,
Ralph J. Wann
President



This John Bean Royal 35 pump
24,000 gallons of water
during 8 hours of daily operation.

Putting Ideas to Work

FOOD MACHINERY AND CHEMICAL
CORPORATION

John Bean Division

San Jose 1, California

Lansing 4, Michigan



JOHN BEAN DIVISION, Dept. WI-2
FOOD MACHINERY & CHEMICAL CORP.
San Jose 1, California • Lansing 4, Michigan

Gentlemen: I am interested in solving the following problem with the John Bean Industrial Pumps. Please send me your catalog and other material on this equipment.

- Water transfer Washing operation Core drilling
 Plant clean-up Hydro-static testing Other
 Hydraulic press operation

Name _____

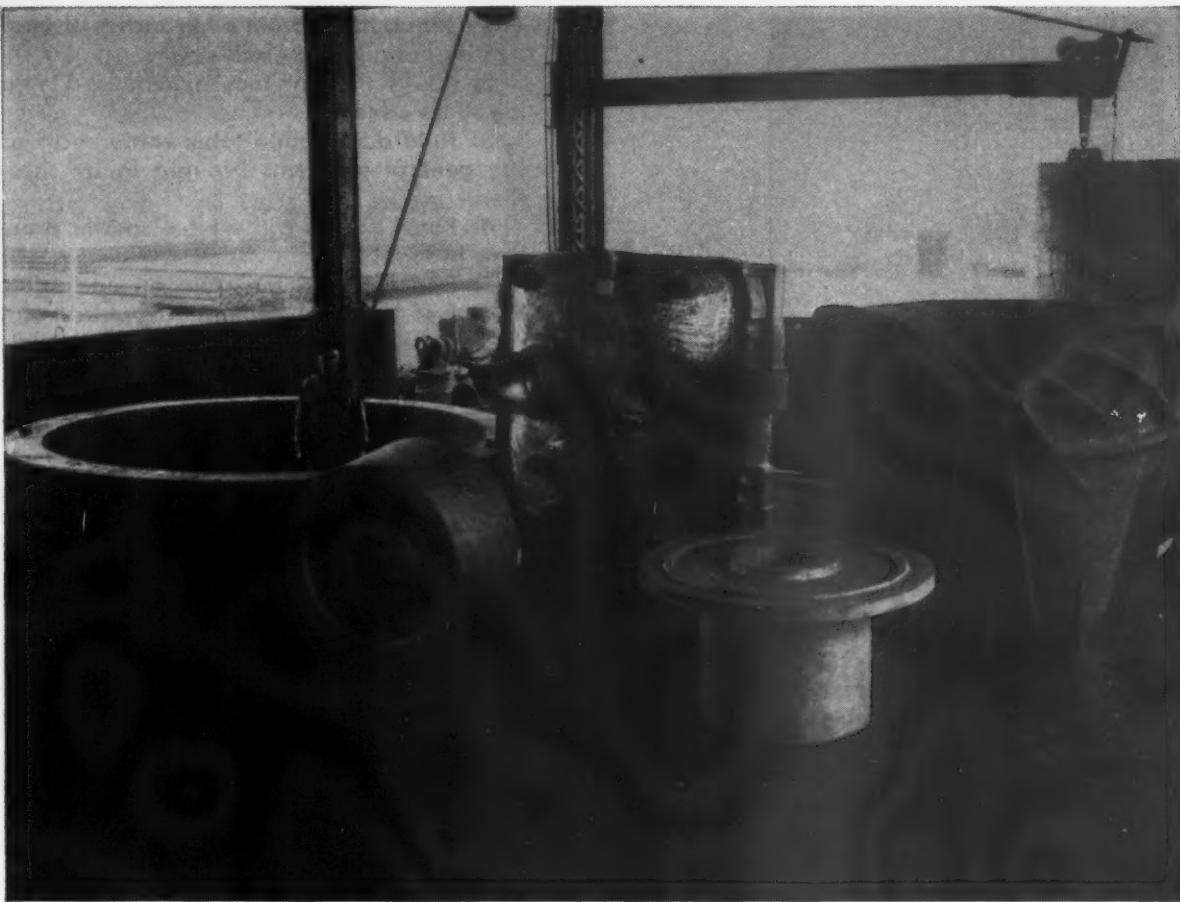
Firm _____

Address _____

City _____ State _____

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WESTERN INDUSTRY — March 1958



These 89,000 lbs. of Torrance-produced castings include a 14-ft. diameter steel tire weighing 28,000 lbs., a 10,000 lb. support roller, a 31,000 lb. cylinder cover, an 18,000 lb. ladle and a 2-ton half of an oilfield rig hoisting drum.

Big special steel products are our business!

These castings and forgings are typical examples of National Supply's ability to satisfy a variety of big steel processing needs. If you need a big special steel product—whatever the form, size or weight—National can do a good job for you, too.

You may require complete manufacturing—or a special operation in forging, foundry, machining, welding or fabricating. Just tell us the problem. We have the machinery, the men and the know-how to handle your special steel product—all or any part of it. It's all done in our Torrance Plant—the largest of its kind on the West Coast.



THE
NATIONAL SUPPLY
COMPANY

INDUSTRIAL PRODUCTS DIVISION
Torrance, California • Los Angeles Area

National Pressed Steel Forgings • Billets and Large Bars • Steel Castings and Special Machinery
Melting • Forging • Casting • Machining • Heat Treating • Assembling • Welding • Testing



This display of rings, discs, shafts and special shapes typifies the versatile range of National Supply forging capabilities. Some forgings are so unusual that special mandrels must be developed for their proper handling.
... for more details, circle No. 9 on Reader Service Postcard

**VIEWS &
COMMENT**

(Editor's note: the following letter was sent to WESTERN INDUSTRY by Roger D. McCoy, consulting engineer, who has been associated with leading companies in the West. Mr. McCoy "retired" recently from his own company . . . but leisure time has just given birth to new ideas, and a desire to help firms with engineering problems. Mr. McCoy's letter advances some ideas that should be of vital interest to all Western industries . . .)

"WE HEAR MUCH about the scarcity of engineers these days. The scarcity is imaginary. There are millions of engineering "experience years" going to waste in the West. Thousands of them are in the San Francisco Bay Area.

"These countless years of education and experience are represented by the engineers of managerial level, who have retired (through no fault of their own) and who have no opportunity to apply their priceless knowledge to productive work.

"Most are financially able to live comfortably the balance of their lives. All are in need of opportunities to exercise their minds and apply themselves to engineering problems.

"On the other hand are the many small and medium size companies—those too *small* to be big . . . and too *big* to be small—who desperately need engineering help.

"These companies cannot afford to maintain a staff of engineers. They may have to struggle along with a draftsman who acts as the engineer. The cost of such an operation is not in the salary of the so-called engineer, but in the fumbles made in arriving at a solution (which is reflected throughout the plant).

"The solution to both problems? Simple . . . bring the engineer and the small plant owner together!

"Several retired engineers, from management level, who are active on a consulting basis, are in the process of banding together a group of competent engineers and draftsmen from all fields to form a non-profit, co-operative organization to supply the solution.

"The organization plans to:

- 1) Have on call retired and semi-retired

engineering talent from all branches of engineering, required by industry.

2) Assign the man most experienced to the job to be done.

3) Hold daily round table conferences on the general problems brought in by these men.

4) Panel groups will explore specific problems brought in.

5) Establish and maintain an up-to-date library of technical books and publications.

6) Establish and maintain an up-to-date library on sources of raw products, materials, supplies and equipment.

7) Supply competent drafting service if necessary.

8) Charge industry on a per diem basis, only for the man or men assigned to them for the job.

9) If desired, clients may retain the organization's services on a "visiting nurse" basis.

10) Clients may retain the services on a retainer fee basis.

11) Larger industries may take advantage of the services for special jobs or overflow work, or during vacation periods to fill in.

"However industries use the organization, they will obtain the finest talent available in the country in mechanical, chemical, civil, electrical and other phases of engineering and science at a cost not much more than that required for a good draftsman. And they will get services of men who, before retirement, drew salaries that were \$12,000 per year, and up."

(Anyone interested in knowing more about Mr. McCoy's plan, circle No. 340 on the Reader Service Postcard or write to WESTERN INDUSTRY, 609 Mission St., San Francisco 5, Calif.)

REMEMBER HOW WE PROMISED pleasant surprises for you at the beginning of the year??—bonanzas that will save you **time** and **money**!!

Well, look at our eight-page special report on CONDITIONED AIR starting on page 43.

The sections "What It Is" . . . "What It Can Do For You" . . . and "Putting It In Your Plant" are fact-packed with information gleaned from talking to air conditioning users and distributors over a four-month period.

Our staff has spent this time in the field, bringing back statements from plant executives as to how conditioned air puts profits in their pockets.

We have tried to present this information in an informative and interesting fashion. We're sure you'll get plenty of ideas on how to save time and money by using conditioned air in your plant.

And don't forget the directory listing of air conditioning suppliers . . . and the best available manuals on the subjects.

TURNER METALS...

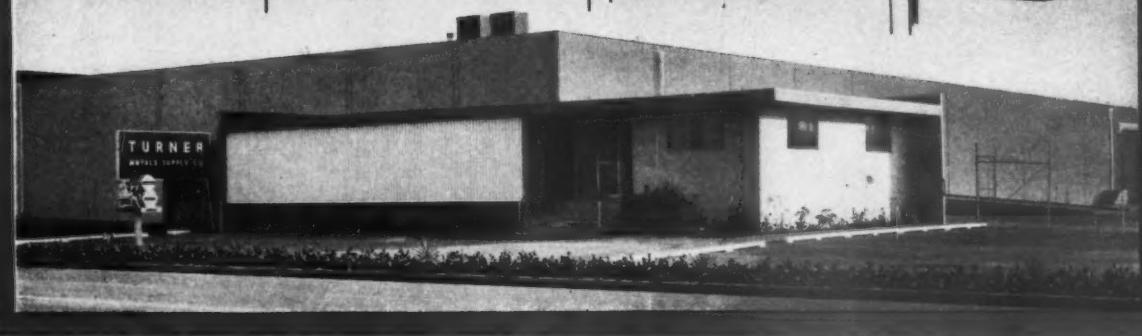
Service Center

FOR



ALUMINUM

ROD BAR and PLATE

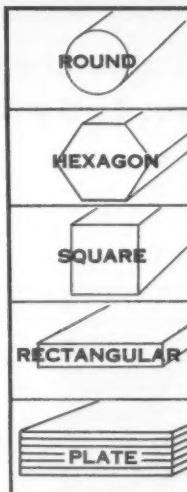


Aluminum Service Center—As a service center for western users of Reynolds Aluminum rod, bar and plate, we provide a warehousing facility enabling manufacturers to buy only the quantities they need—from 1 lb. to a carload—at the time they need it. This together with technical information available on all aluminum application problems, makes Turner Metals a true service center.

Experienced Technical Assistance—The sales staff at Turner Metals is composed of men who are rod and bar specialists. The benefit of their experience is always on tap at a customer's request.

Complete Stocks—Turner Metals has one of the largest stocks in the west of Reynolds Aluminum rod, bar and plate, with all the usual—and unusual—required alloys in a tremendous range of sizes.

WRITE FOR STOCK LIST AND PRICES TODAY



ALLOYS IN ROD & BAR & PLATE

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- 2011-T-3
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- 7075-T-6
- 2014-T-6
- 2014-F
- 6061-T-6
- 7075-T-6
- 3003
- 5052

METALS SUPPLY CO.

6560 E. Bandini Blvd., Los Angeles 22, Calif.

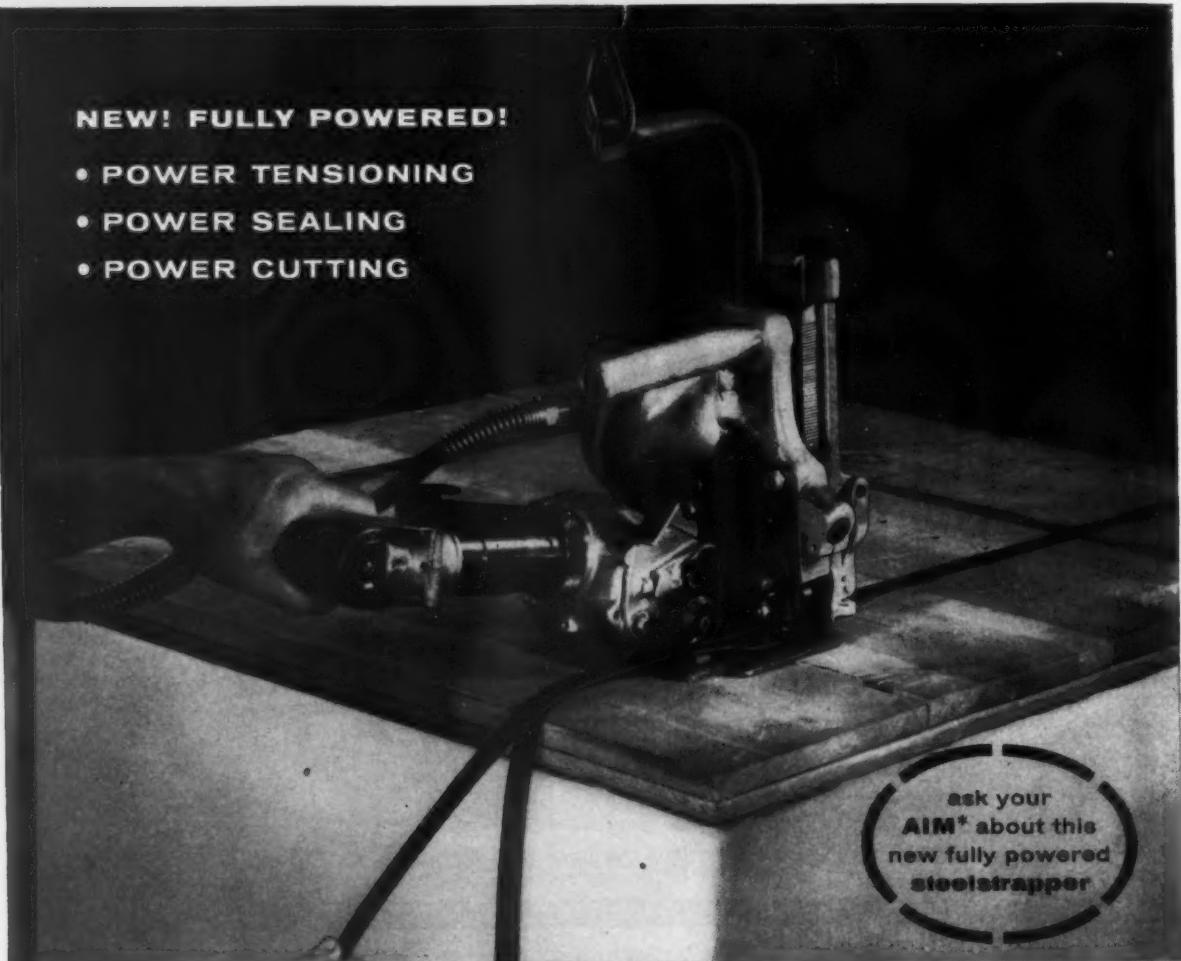
Call RAYmond 3-9131

DISTRIBUTORS OF ALUMINUM, BRASS, STEEL, STAINLESS

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NEW! FULLY POWERED!

- **POWER TENSIONING**
- **POWER SEALING**
- **POWER CUTTING**



ask your
AIM* about this
new fully powered
steelstrapper

Announcing another Acme Steel first...

The new, fully powered A4 Steelstrapper

ACME STEEL COMPANY is first to offer industry a Steelstrapper that tensions, seals and cuts steel strapping automatically... all with air power. Called the A4 Pneumatic Steelstrapper, this new tool includes one-hand controls among its many features.

With steel strapping quickly and easily inserted, the operator merely presses a control on the handle to power-tighten strapping to predetermined tension. And then with another power control on the same handle, magazine-fed seals are applied and the steel strapping cut without waste or operator effort.

Your *Acme Idea Man can demonstrate the new A4 Pneumatic Steelstrapper and show you its many time, effort and money saving advantages. The first full-power tool of its kind, the new A4 Steelstrapper will give maximum performance in your steel strapping application.

Contact your **Acme Idea Man** at the nearest Acme Steel Company office. Or write: Dept. WCS-38, Acme Steel Products Division, Acme Steel Company, 4801 Pacific Blvd., Los Angeles 58, California. Also San Francisco, Seattle, Portland.

Ask your Acme
Idea Man, or
write, for your free
brochure detailing
the features of
the new fully
powered A4
Steelstrapper.



**ACME
STEEL**

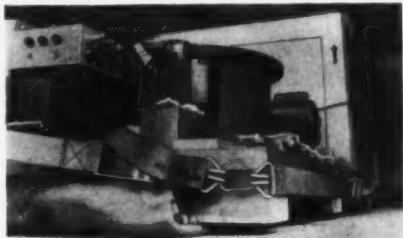
STEEL STRAPPING

...for more details, circle No. 11 on Reader Service Postcard

WESTERN INDUSTRY — March 1958



Vital component of camera that photographed the first Sputnik was carefully lowered on specially built skid, where it was secured by bolts and protected by cushioning material.



Strapped against wall of Vanliner by 4,600-lb. test nylon web belts, skid rests on pads that further reduce vibration. Bekins moving strategists scientifically plotted every step of the project.



Co-drivers Bob Mowry (at wheel) and Walt Souders (in sleeper compartment) safely piloted their precious cargo to New Mexico destination in 22 hours. They are veteran members of Bekins highly specialized electronic equipment moving service.

First instrument to "shoot" satellites!

...Bekins transports delicate \$100,000 camera

It happened several weeks ago. A big Bekins Vanliner picked up the world's first astrophysical camera from its manufacturer in South Pasadena. Skilled workmen, using special Bekins equipment, carefully loaded sections of the enormous three-ton instrument into the Vanliner for transport to White Sands, New Mexico. Upon arrival at the Smithsonian Institution Observatory there, the camera was set up to track and photograph the orbit of man-made satellites, providing new scientific knowledge of the earth and the realm of outer space.

This challenging moving job was assigned to Bekins on the basis of 67 years of experience, superior facilities, and moderate cost. Bekins is the world's largest moving and storage organization, providing van, rail, air, and ship moving service to all 48 states and to all parts of the world. Services include: (1) local and long-distance moving, storage, and packaging of *household* goods; (2) moving and storage of *office* and *electronic* equipment and business records; (3) moving, storage, and packaging of *industrial* products, merchandise, machinery, and trade exhibits.

For complete information on moving, storage, packing, or world-wide shipping, call the Bekins office that serves your community. Or, write

BEKINS VAN AND STORAGE CO.
1335 South Figueroa Street,
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BEKINS
Since 1891
VAN & STORAGE CO.

...for more details, circle No. 12 on Reader Service Postcard

WESTERN MEETING REPORTS

AN ARRAY OF WELL-QUALIFIED SPEAKERS—six on material handling and four on packaging—will join keynote speaker Dr. Lillian Gilbreth to present the program of the third annual Packaging and Materials Handling Conference scheduled for April 4 and 5 in Dwinelle Hall at the Berkeley campus of the University of California.

Packaging and materials handling sessions on Friday will run concurrently, with delegates assembling for discussion groups on the topic of their choice after hearing the addresses. Materials Handling speakers on the first day will include, together with their topics: Eugene P. Spector, member of the Maritime Cargo Transport Conference, San Francisco, "A Comparison of Conventional vs. Unitized Handling Systems"; Arthur Allison, industrial engineer for Purity Stores, San Francisco, "Justifying a New Materials Handling System"; Don C. Gutleben, engineer for C. & H. Sugar Refining Corp., Crockett, Calif., "Automatic Bag and Box Palletization"; and W. B. Semco, W. B. Semco & Associates, Los Angeles, "Improving Utilization of Present Equipment."

Packaging sessions will feature Orville Johnson, Western Waxide Division, Crown Zellerbach Corp., San Francisco, "Latest Developments in Flexible Packaging Materials"; P. Kenneth Brown, Ramo-Wooldridge Corp., Los Angeles, "Mathematical Analysis of Shock and Vibration"; John H. Heller, Association of American Railroads, Los Angeles, "Packaging of Dead (Industrial) Freight"; and a talk on government packaging by a speaker as yet unnamed.

The forenoon of the second day will be given over to a transportation panel which will include Dale E. Medland, superintendent of ramp service, United Airlines, Denver, Colo.; N. A. Passer, engineer car design and construction, Southern Pacific Co., San Francisco; L. O. Toburen, director of dispatch-

ing, Pacific Intermountain Express, Oakland, Calif.; and Foster Weldon, director of research for Matson Navigation Co., San Francisco.

Two materials handling talks in the afternoon will conclude the session. These will be by Sherman Kingsbury, management service division, Arthur D. Little, Inc., Cambridge, Mass., "Operational Research"; and Michael C. Donohue, Mars Metal Corp., San Francisco, West Coast Chairman, National Association of Waste Metals Dealers, "Methods of Disposing of Plant Waste Materials."

Dr. Gilbreth, opening day luncheon speaker, is a native of Oakland, Calif.,



DR. LILLIAN GILBRETH

graduated from the University of California and holds degrees from such universities as Brown, Temple, Rutgers, Michigan, Smith College, Russell Sage College, and Stevens Institute of Technology. In 1948 she was named "Woman of the Year" by the American Woman's Association and in 1949 the National Institute of Social

AIR CONDITIONING GRANT—William P. Tennity (seated, left), president of Western Air Conditioning Industries Association, presents a check to Dean Harold P. Hayes, of California State Polytechnic College, to assist with a new educational program instituted by the College to encourage more young people to enter the air conditioning and refrigeration field. The grant was made possible through the Association's Western Air Conditioning, Heating, Ventilating and Refrigeration Exhibit and Conference to be held May 7-11 in Los Angeles. Association board members looking on are (standing, left to right): David Reznick, Fred J. Tabery, Peter Askew, Rudy Harkens and Robert Savage.



Sciences awarded her the coveted Washington Award, making her the first woman to be so honored since the first presentation of the award to Herbert Hoover in 1919. She is also the central figure in the best-seller book and movie, "Cheaper By the Dozen."

The 1958 Conference is sponsored by the Bay Area chapters of the American Materials Handling Society and the Society of Industrial Packaging and Materials Handling Engineers in cooperation with the engineering department of the University of California. A complete program and registration forms will be in the mail early in March. The engineering departments of California and Stanford universities will furnish keynote speakers for each day.

For further information contact Robert O. Swendsen, East Bay Municipal Utility District, Oakland, Calif.

WHY YOU SHOULD GO to the ELECTRICAL INDUSTRY SHOW

There's lotsa cash that says you should attend the Electrical Industry Show and Conference on March 27, 28 and 29 at the Shrine Exposition Hall in Los Angeles.

Because you'll see and hear a million bucks worth of ideas and equipment...that will save you time and money in your own operations.

Wanta bet? So, okay, turn to page 36 and see what we mean. We've got a sure winner!

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FIELD REPORT**

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LUBRICANT CUTTING FLUIDS
FIRM LAMSON MOBILIFT CORP.
Portland, Oregon

Chevron* Cutting Fluids save time and money on machine tool operations



AFTER TESTING many different cutting solutions, Lamson Mobilift Corp. now uses Chevron* Cutting Fluids for all machining operations. This Warner and Swasey 3A turret lathe (above) drills and forms generator gears, using Chevron Soluble Oil. Unit operates at a surface speed up to 300 feet per minute.

Plant Foreman Lloyd McCartney reports: "Of all the products we've tried, Chevron Cutting Fluids do the best job of keeping tools and work cool. Because of this, they've speeded up our machining operations and save us time and money." This company manufactures all components, including engine parts, for their Mobilift fork trucks. Other Chevron products in use are Chevron Cutting Oil 33DA and Chevron TR Compound on tapping machines.

For Expert Help on lubrication or fuel problems, call your Standard Engineer or Representative, or write to 225 Bush Street, San Francisco 20, California.



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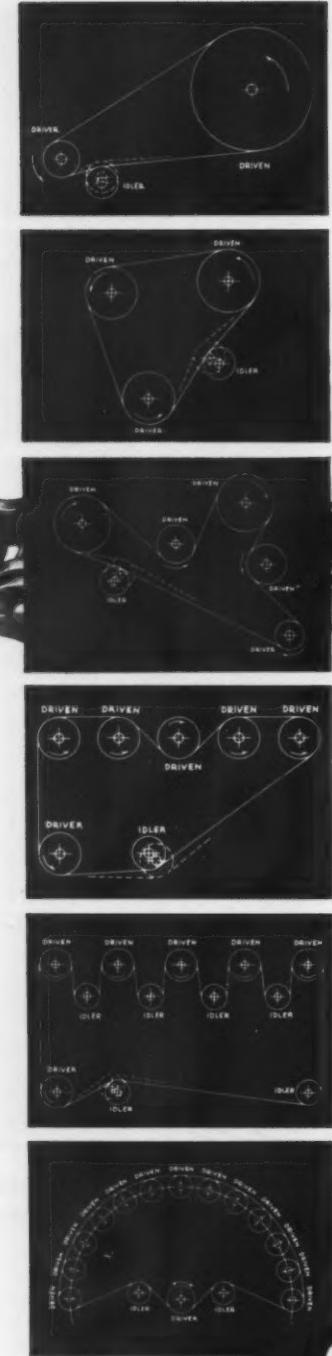
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*The Chevron Brand covers the line of industrial products formerly sold under the Calol name. This is a name change only. The high quality and specifications remain the same.



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WESTERN MEETINGS

continued from
page 16

DO YOU KNOW that 87% of all direct costs are pinned on material handling? You'll admit that is a pretty big tab. And you'd like to cut out unnecessary costs, wouldn't you?

Well, you can start figuring what you'd like to do with the money you save when you bring back cost-cutting know-how from the 1958 **Western Material Handling Show** sponsored by the American Material Handling Society on May 8, 9, 10 in Los Angeles.

The Society, which is dedicated to the science of material handling, will be assisted in these objectives by exhibitors featuring every major material handling system. During this three-day show over \$5,000,000 worth of equipment gathered from every-

The first Western Regional meeting of chapters of the AMHS will be held during the show, announces Ed Sullivan, Western Regional Vice President.

where in the United States will be shown—largely for the first time—at the Great Western Exhibit Center, Santa Ana Freeway at Atlantic Boulevard.

Refinements in industrial packaging, warehousing, maintenance, automation, distribution and freight and cargo handling systems will be presented for demonstration and explanation. The newest machines, cranes, hoists, industrial trucks, pneumatic, fluid, belt, screw, vibrator and overhead conveying systems—plus the last word in procedures, servicing and engineering of American and foreign industrial know-how—will be exhibited.

Admission to this trade show is free by registration to the people of business and industry. Those concerned with cutting costs . . . more efficient methods . . . time-saving and superior end results will find that package machinery, industrial sweepers, light and heavy duty indoor and outdoor equipment, front end loaders, truck lifts, electric and gasoline plant vehicles, industrial communications, custom hand trucks, pallets and shelving are but a few of the many items represented that will be of interest and value.

The National Fork Lift Truck Rodeo combined with the Technical Conferences of the Society add both entertainment and education to each of the three days of the show. The Western barbecue, American space satellite Vanguard, electronic convey-

An improved Combination Starter for extra safety

While the changes in the new Allen-Bradley Bulletin 712 and Bulletin 713 starters may be relatively minor, they were made in your interest—to give you the best control on the market.

The new operating lever has been attractively restyled and structurally improved. Now the disconnect switch can be locked "open" or locked "closed"—with three padlocks of any kind. For the maintenance engineer, a concealed latch pin is built into the lever, which permits opening the door of the cabinet without opening the disconnect switch and stopping the motor. The door can also be padlocked shut independently of the operating lever.

With the disconnect lever in the "off" position, the cabinet door can be opened. At a glance, it can be seen that the movable contacts are open. An added "safety" feature—the incoming line connections are covered with an insulating plate to prevent accidental contact.



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Size 2—to
15 hp, 220 v.;
25 hp, 440-550 v.



Size 1—to
7½ hp, 220 v.;
10 hp, 440-550 v.



Size 3—to
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H. D. Easterbrook, 1264 S. Boyle Ave., Tel: ANgelus 9-9421

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SEATTLE 1—J. Tudor & Associates, Inc., 2605 Western Ave., Tel: Mutual 7444

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James A. Sechell, 301 W. "G" St., Tel: BElmont 3-3981

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If you're like most wire cloth fabricators or users, delays in your normal supply channels can cost you money—even cause you to lose out on important hurry-up jobs. You can't afford the days it sometimes takes a wire cloth salesman to get to your desk from his distant office. Nor can you afford hours or days while he gets quotations from his mill.

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WESTERN MEETINGS

continued from
page 18

ing controls, modern compartmentized railroad freight cars and specially designed monorail installations are but a few of the many features of the show.

THE 1958 PACIFIC SOUTHWEST MINERALS INDUSTRY CONFERENCE will be held March 27, 28 and 29 at the St. Francis Hotel in San Francisco. Hosts will be the San Francisco sections, with the cooperation of the Reno, Las Vegas and Southern California sections.

Forty papers will be presented, ranging in subject from practical and economic interest to the latest advances in earth sciences. A feature of the conference will be a number of papers describing the use of mineral materials by the chemical and process industries of this region.

Another feature of the conference will be a field trip to the two-and-a-half acre working model of San Francisco Bay which is operated by U. S. Army Engineers at Sausalito.

Further information may be obtained from Fred Loshe, Kaiser Aluminum & Chemical Corp., Oakland, Calif.

A MISSILE SHOW AND CONFERENCE is scheduled for March 20-21 at the Shrine Exposition Hall in Los Angeles.

Some 500 major and subcontractors will exhibit at the show, and there will be displays of the latest, well-known missiles.

Dr. Werner von Braun and Adm. W. F. Raborn top the list of prominent speakers at luncheons and conferences. Further information can be secured from the Domestic Trade Dept. of the Los Angeles Chamber of Commerce.

THE LUMBERMEN'S INDUSTRIAL RELATIONS COMMITTEE has elected the following new officers: Hillman Luedemann, Portland, president; Richard W. Middleton, Aberdeen, vice president; S. L. Gregory, Portland, treasurer; Walter Durham, Jr., Portland, secretary; M. L. Sullivan, Portland, assistant treasurer. Elected to membership on the executive committee were: William Black, Seattle; Theo. A. Deal, Longview; Henry Dennis, Everett, and G. M. Rheebeck, Hoquiam.

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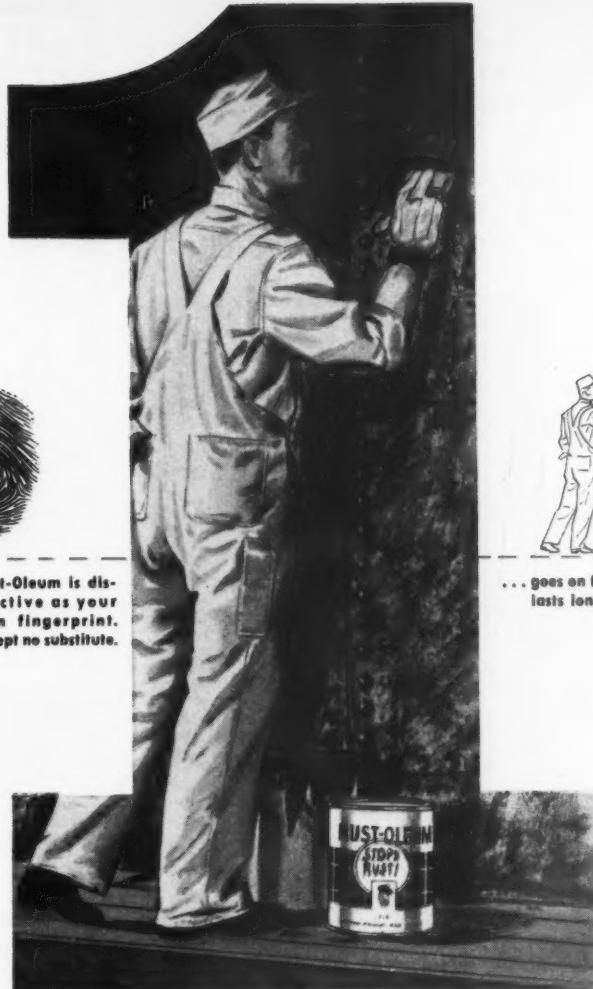
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EASIER TO USE—because Rust-Oleum 769 Damp-Proof Red Primer goes over rusted metal after scraping and wirebrushing to remove rust scale and loose rust—usually eliminating costly surface preparations. *Stops Rust*—because Rust-Oleum's specially-processed fish oil vehicle penetrates rust to bare metal—driving out air and moisture that cause rust.

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30% GREATER COVERAGE—
MANY ATTRACTIVE COLORS

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**WESTERN
MEETINGS**

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page 20

THE ARIZONA CHAPTER of the Society of Packaging and Material Handling Engineers (SIPMHE) started off its year with a dinner meeting, featuring as guest speakers John Carroll, of Cornell University, and Capt. William Knowles, who is a specialist in packaging and material handling of the "Human Body."

A film entitled "Packaging the Body" was shown. In addition, Mr. Carroll demonstrated new materials used to prevent damage in crash cases.

The meeting was enthusiastically acclaimed by all attending, and Chris Seferlis, president of the Arizona SIPMHE, extends an invitation to all interested in joining to attend the meetings starting at 7 p.m. on the third Monday of each month at Newton Prime Rib, Phoenix.

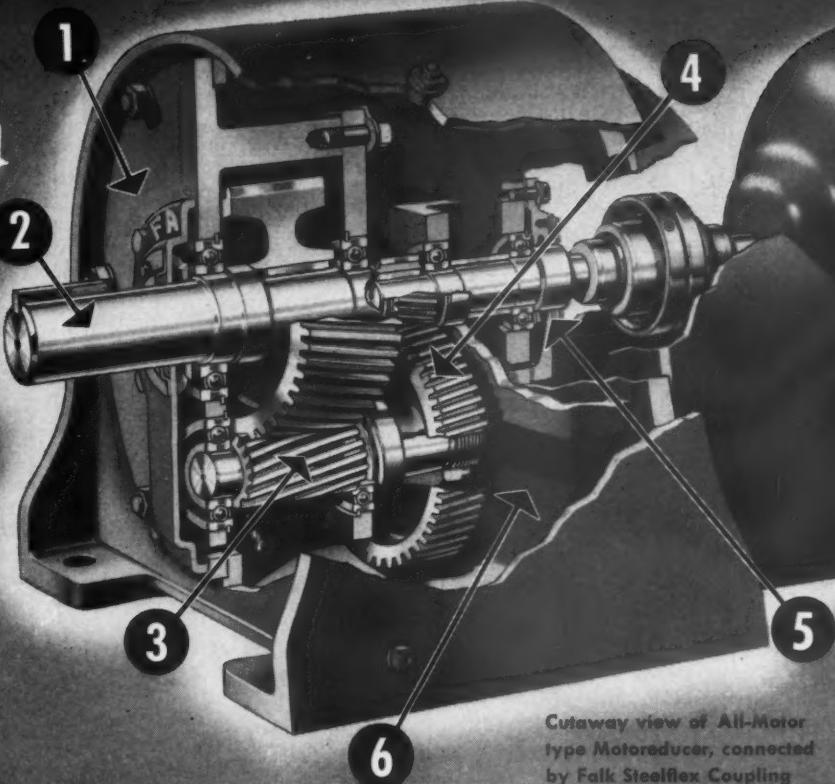


AIPE TOUR—Pictured above are members of the San Francisco area chapter of the American Institute of Plant Engineers on a recent tour of the Republic Supply Co. in San Leandro.

"APPLICATION OF PUNCHED CARD ACCOUNTING TO A CONTROL PROBLEM" was the subject of a talk by George M. Wood, of Sandia Corp., before the March meeting of the Albuquerque chapter of the American Institute of Industrial Engineers. The meeting was held at Reddy's Rendezvous in Albuquerque. Those interested in attending future meetings (held the third Monday of each month), should contact Paul M. Wallack, 9519 Arvada N.E., Albuquerque.

NEW OFFICERS OF THE GOLDEN GATE CHAPTER, American Society for Metals, are: Robert L. Ray, Pyromet Co., chairman; R. L. Nichols, Earle M. Jorgensen Co., vice chairman; Harold E. Krayenbuhl, retired, secretary; Sutherland Hutton, Thomas S. Hutton & Son, treasurer.

*Here's
the
inside
story—*



Cutaway view of All-Motor type Motoreducer, connected by Falk Steelflex Coupling to standard NEMA frame motor

WHY Falk Motoreducers give better service—have longer life

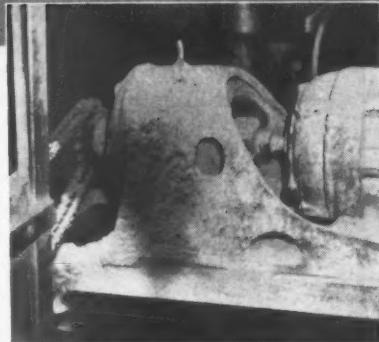
Here is the "inside story" behind the all-steel All-Motor type FALK Motoreducer's universal reputation as a gear drive unmatched in quality, efficiency, dependability, ease of maintenance and long life. These "In-built" factors are—

- 1 **ALL-STEEL HOUSINGS.** Rugged, strong, rigid...all parts are manufactured from heavy steel plate, formed and welded in the Falk Weld Shop.
- 2 **LARGE OVERHUNG LOAD CAPACITY.** Large shafts, oversize bearings...rigid mountings with wide bearing spans to handle maximum applied loads.
- 3 **PRECISION GEARING.** Heat-treated alloy steel gearing, precision cut and shaved after heat treatment to eliminate distortion. Quiet, crown-shaved pinions.

When you buy or specify the All-Motor type FALK Motoreducer, you get all these—plus the tremendous advantage of full interchangeability of motors. Switch motors as desired—use any make, style or type of standard foot-mounted motor within the unit's AGMA rating—with a minimum of difficulty or "down time."

Available in sizes up to 75 hp—with or without motor—from convenient factory, field or distributor stocks, from coast to coast. Write for Bulletin 3100.

- 4 **EXTRA-CAPACITY GEARING.** Special extra-capacity gear-tooth form with larger contact area gives greater strength, higher load-carrying capacity.
- 5 **SEALED HOUSINGS.** Splashproof, dust-proof, oil-tight construction. Dual closures and one-way vents keep oil in, dust and moisture out.
- 6 **POSITIVE LUBRICATION.** Large sump capacity...oiltight construction assures clean lubricant...revolving elements lubricated by direct dip.



60,000 HOURS WITHOUT A FAILURE!

Sixty thousand hours is a lot of hours—but the FALK Motoreducer in the unretouched photo above has served that long without failure or need of repair.

This 3 hp unit is one of over 60 FALK Motoreducers in daily service in an Eastern plant of a large milling company, whose president says, in part:

"One of the main advantages of FALK Motoreducers is their adaptability to any motor. Reducers and motors can be easily interchanged....Our service records confirm the wisdom of our choice of FALK equipment as our standard."

FALK

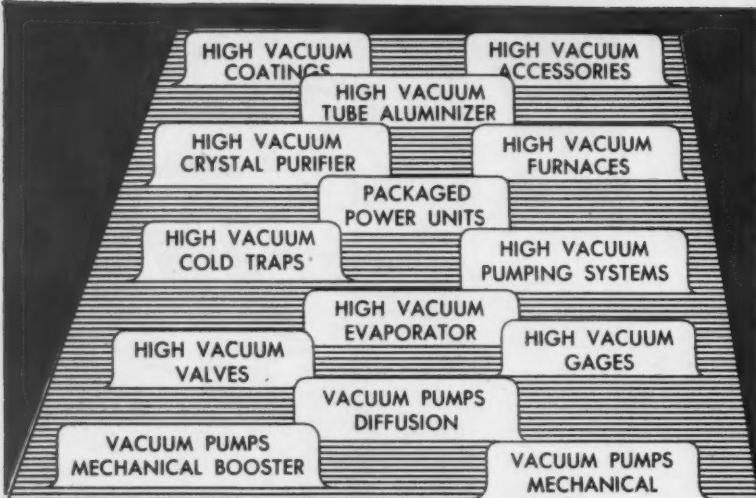
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- Single stage pumps—13 to 780 cfm. Ultimate pressure to 10 microns (McLeod).
- Two stage pumps—2 to 46 cfm. Ultimate pressure to 0.2 micron (McLeod).
- Two and Four stage mechanical booster pumps—30 to 5100 cfm. Ultimate pressures to 0.1 micron.

The KINNEY Line of High Vacuum Pumps, Components and Complete Vacuum Systems is the broadest in the world—including advanced type equipment for Laboratory, Pilot Plant and full Production.

KINNEY Equipment offers PLUS Values for Metallurgical, Optical, Electronic and Electrical, Nucleonic, Air Conditioning and Refrigeration applications. And—there is a KINNEY representative near you, prepared to discuss your problem from a background of experience and High Vacuum "Know-how."

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WESTERN MEETINGS

continued from
page 22

AIPE VICE PRESIDENT



Jim M. Weeks, plant engineer, Proto Tool Co., Div. of Pendleton Tool Industries, Inc., has been elected National Vice President of the American Institute of Plant Engineers. Jim is a charter member of the Los Angeles chapter, AIPE, and previously served as Western Regional Vice President.

INTERESTED IN JOINING the American Institute of Plant Engineers? If you live in any of the towns listed below, here are the tentative dates for organizational meetings, and the men to contact:

Portland, Oregon

May 1 to 15, 1958

Robert Olson, Factory Supt.

P & C Tool Company
636 Thirty-second Avenue
Milwaukie, Ore. (Olive 4-5471)

Seattle, Washington

First 2 weeks of May, 1958

Henry J. Evans, Plant Engineer
Pacific Car & Foundry Co.
Renton, Wash. (OLive 4511)

San Jose, California

Immediate future

A. W. Kissner, Ford Motor Co., San Jose, or any of the San Francisco chapter officers.

Boise, Idaho

First 2 weeks of May, 1958

V. E. Matson, Master Mechanic
Amalgamated Sugar Co.
Nampa, Idaho, or
Spencer Bryant, Master Mechanic
J. R. Simplot Co.
Caldwell, Idaho

San Diego, California

July, 1958

W. E. Fore, Plant Engineer
North American Aviation
International Airport
Los Angeles, Calif.
(ORegon 8-3011)

Phoenix, Arizona

October, 1958

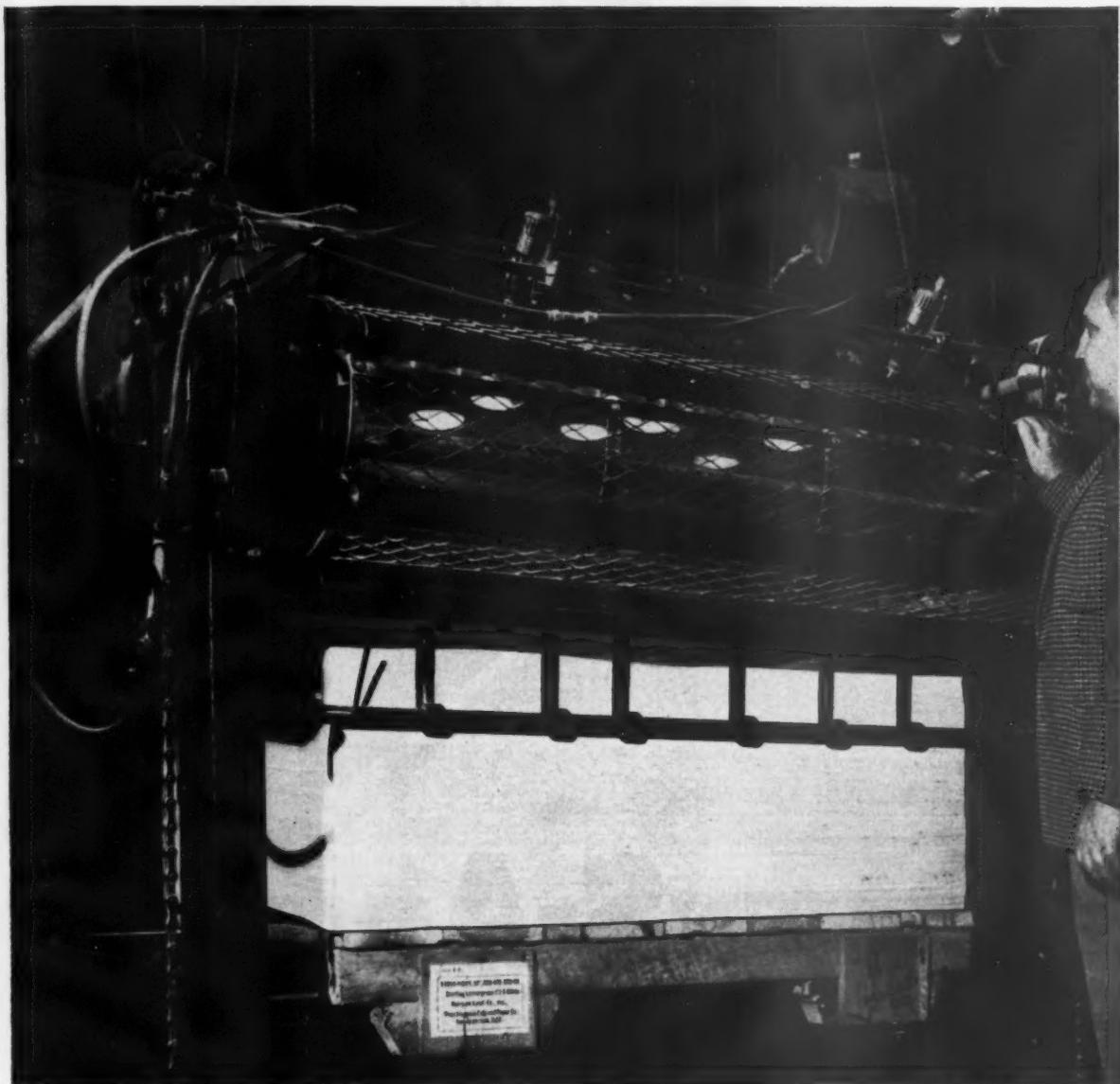
C. F. Gort, Plant Engineer
Sperry Phoenix Co.
Div. Sperry Rand Corp.
Arizona State Fair Grounds
Phoenix, Ariz.

Long Beach, California

June, 1958

J. M. Weeks, Plant Engineer
Proto Tool Company
P. O. Box 3519, Terminal Annex
Los Angeles 54, Calif.
(LUDlow 9-3311)

infrared heating solves another production problem:



reducing "offset" on printed sheets

Muirson Label Company, San Jose, had a problem common to any printing house: how to prevent transfer of ink from one sheet to another when they stack up fresh off the press. Muirson's solution: *a bank of infrared lamps*

which set ink faster, greatly reducing offset. Infrared's radiant energy removes static from paper, further reducing offset. Also, the additional light from infrared lamps allows a more thorough inspection of printing.

If your plant uses heat in any form, infrared may hold a unique advantage for you. Best way to find out (at no cost) is to call your local P. G. and E. office — today.

P·G and E·

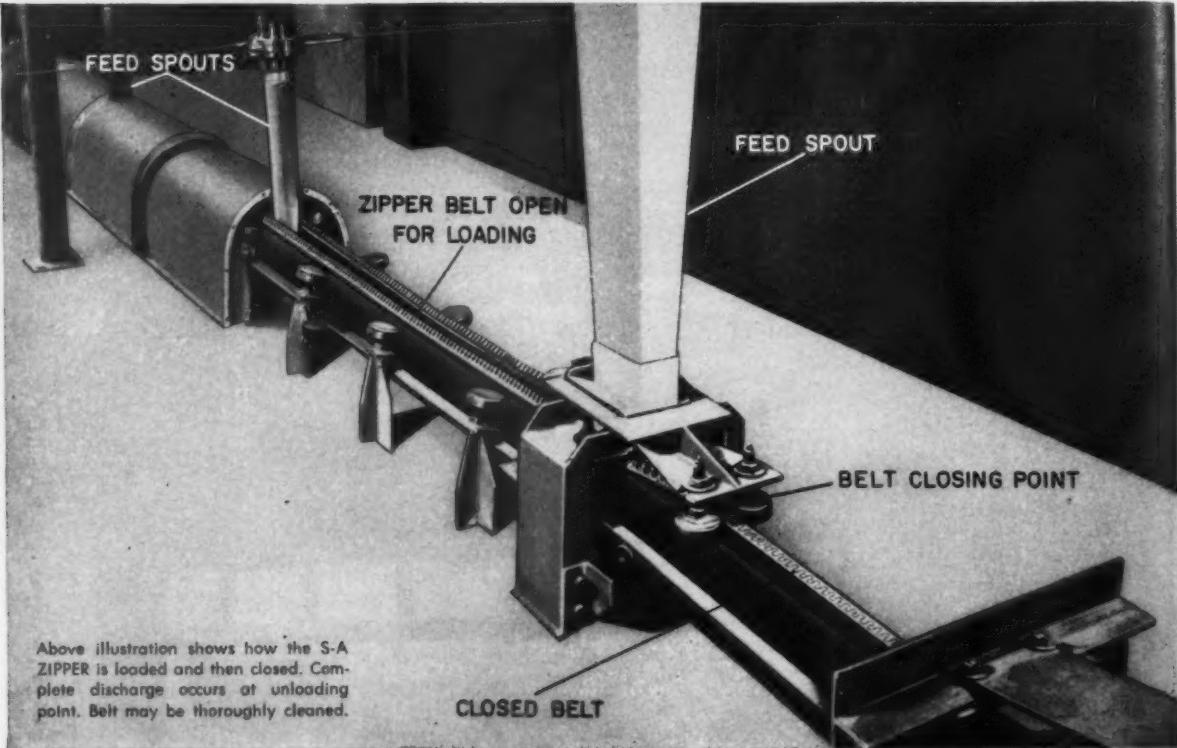
Pacific Gas and Electric Company

... for more details, circle No. 21 on Reader Service Postcard

FRAGILE BULK MATERIALS ARE HANDLED GENTLY, SAFELY
 by "ZIPPER" CONVEYORS-ELEVATORS

CLOSED-BELT

NO SEGREGATION — NO DEGRADATION OF MATERIALS



Above illustration shows how the S-A ZIPPER is loaded and then closed. Complete discharge occurs at unloading point. Belt may be thoroughly cleaned.

STEPHEN S-ADAMSON

THE BIG NAME IN BULK MATERIAL HANDLING EQUIPMENT

Bulk materials—granular, flaky, pulverized, or small lump, can be conveyed or elevated in any plane, entirely enclosed, and protected by S-A ZIPPER belts. The most delicate materials are moved swiftly and economically, without degradation, or separation.

ZIPPER conveyors require no casing, can be used to carry over long distances, around obstructions in numerous flexible arrangements. The belt simply opens to receive material, then zips closed, sealing its load in a dust-tight casing, moving material within the belt over a system of guide rollers and pulleys to any point of discharge.

The ZIPPER conveyor is exclusively an S-A product. It is ideally suited to materials requiring clean and gentle handling. Belt speeds range up to 200 F.P.M., discharge is possible at any point on horizontal, inclined, or vertical runs.

S-A designs and builds conveying systems for all bulk chemical handling requirements. If you have a problem and want expert help, call the S-A sales engineer in your area, or write to any of the main offices listed.

For complete catalog data on ZIPPER conveyors, write for a copy of bulletin 349.

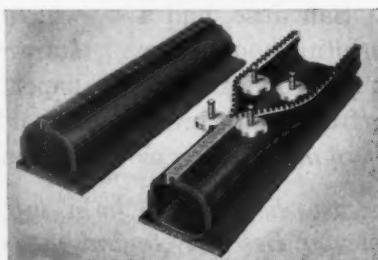
S-A district or main plant offices can supply complete information on any conveyor product, or any phase of chemical product handling. Bulletins on all products available upon request.



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PLANTS LOCATED IN: LOS ANGELES, CALIF.
 CLARKSDALE, MISS. • BELLEVILLE, ONTARIO



Section views thru the endless ZIPPER belt shows how load is completely enclosed. Belt teeth are automatically spread, meshed and locked by means of ball bearing rollers. Material moves forward with belt.

1. Rubber ZIPPER belt open flat for return run and for cleaning.



2. Sidewalls brought into vertical position and ready for loading.

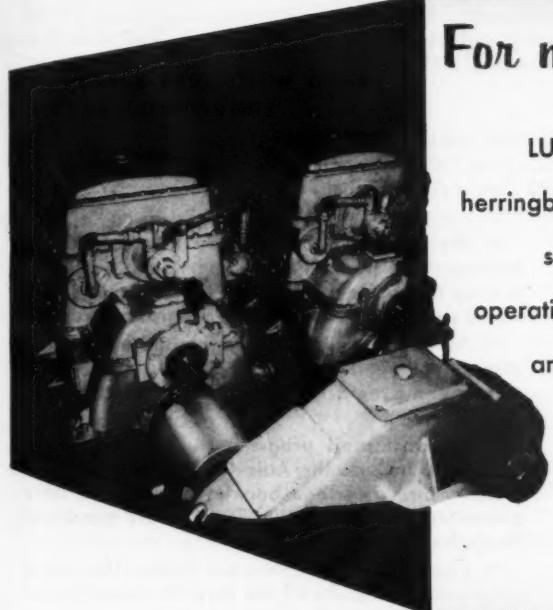


3. Flexible sidewalls completely closed for conveying and elevating.

... for more details, circle No. 22 on Reader Service Postcard
 WESTERN INDUSTRY — March 1958



LUF



generated precision quietness
rugged dependable horsepower

marine
gears

For more profitable operating hours

LUFKIN marine designs feature Sykes precision generated herringbone gears throughout... mounted in heavy duty split housings... for the ultimate in quiet dependable operation... marine reduction gears, reverse reduction gears and geared compounds... a wide range of models from 450 HP to 2500 HP and standard ratios up to 5 to 1 maximum... cutterhead reduction gears... in-line vertical offset from 100 HP to 1200 HP.

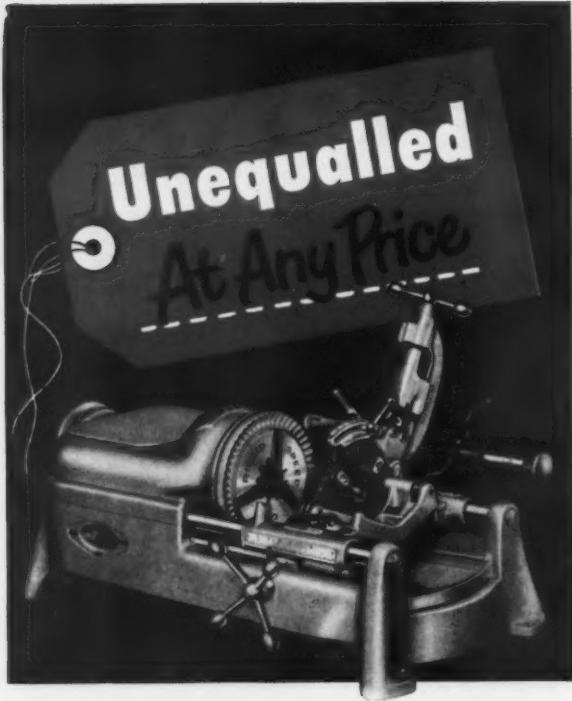
On your next application, check the design advantages of LUFKIN... call or write

LUFKIN
FOUNDRY & MACHINE CO.
Plant & General Offices
Lufkin, Texas

Sales Offices

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Houston 2, Texas
149 Broadway, New York, N.Y.
5959 South Alameda, Los Angeles, Calif.

...for more details, circle No. 23 on Reader Service Postcard



RIDGID

No. 535

**Pipe & Bolt Threading Machine
Complete with 1 Universal Die Head
and 2 Sets of Dies, $\frac{1}{2}$ " to 2"...**



Built like a machine tool, designed to thread, cut and ream with speed and ease no other machine offers you. Compare its slip-proof Speed Chuck, front chucking, instant size-change right in carriage, and many other RIDGID features. It pays you to see and try this most-for-your-money 535 at your Supply House before you decide.

...for more details, circle No. 24 on Reader Service Postcard

28

LABOR NOTES for the WEST

HOLD UP A MIRROR

This is the idea of the **Garrett Corp.**, Los Angeles, which is sending forms to employees so they can express themselves anonymously on working conditions, industrial relations policies, supervision and current company activities.

Employees are provided a check list with about 25 questions, and extra space to express an opinion on any subject—including those not on the survey.

The completed forms are tabulated by an outside research team, and the identity of the employee is carefully guarded.

In this way, Garrett hopes to find out how it's doing—from the inside.

FOR THE SECOND STRAIGHT YEAR, the Seattle plant of **Bethlehem Pacific Coast Steel Corp.** was presented with the Vice President's Safety Award for 1957.

For 1957, the rate at the Seattle plant was 1.43... which means there were 1.43 lost-time accidents per million man-hours worked. For 1956, when the Seattle plant also won the award, the rate was 1.91.

The Seattle plant's safety record was all the more outstanding considering the disruptions in operations caused by construction activities during the year. The plant is in the midst of a \$25,000,000 expansion program.

HAVING TROUBLE WITH IMP'S? Allis-Chalmers is conducting an "all-out" campaign at its plants to eliminate IMP'S (improvising, impatience, impulsiveness, and impudence) which includes these steps:

- Meetings will be held by key safety and management people with supervisory personnel in shop and office to define the purpose and extent of the program, to explain the progressive results.
- All employees will have the opportunity, on company time, to see the half-hour safety film with opening remarks by R. E. Stevenson, company president.
- A direct mail program to the employee's home will include the Allis-Chalmers safety philosophy and a cartoon booklet relating the story presented in the film, plus tie-in safety messages throughout the year.
- Employee publications will feature the safety program and results of the drive in many issues during the 15-month period.
- Decals for auto bumpers, hard hats and tool boxes, plus posters and banners with a new safety principle noted each time will be placed and replaced in strategic spots throughout the plant.
- "Facts" folders that present a capsule message on a particular point in the safety program range from general information to specific safety practices.

Caution is the watchword throughout the campaign and is stressed by the use of the yellow caution flag of the auto racing fraternity that signals "slow down and watch your step." Miniature yellow flags will be displayed on supervisory employee desks in all works as a constant reminder to slow down and think when confronted by any one or all of the four trouble IMP'S.



FOR UNTEMPERED SPRING STEELS ...

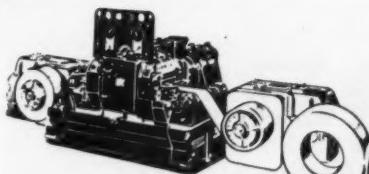
Specify Calstrip Cold Rolled Strip

... C-1050, C-1065, C-1075

If you require strip with uniform thickness, finer finish, exact width, clean edges and with controlled structures that give the desired response to forming and heat treating—then you want CALSTRIP SPRING STEEL STRIP—the steel with all these qualities combined.

Our new Sendzimir mill can roll these specialty steels for you down to .008" thickness and in widths to 12 $\frac{1}{4}$ ". Very precise annealing of our spring steels is performed in modern single-stack furnaces equipped with newest electronic controls.

Calstrip steels are not available from stock, because they are carefully produced on each order to the exact quality required for your individual fabricating operations. Location of our mill in Los Angeles assures delivery "on schedule." Let us assist you in selecting the grade of spring steel possessing the best properties for your use.



Calstrip®

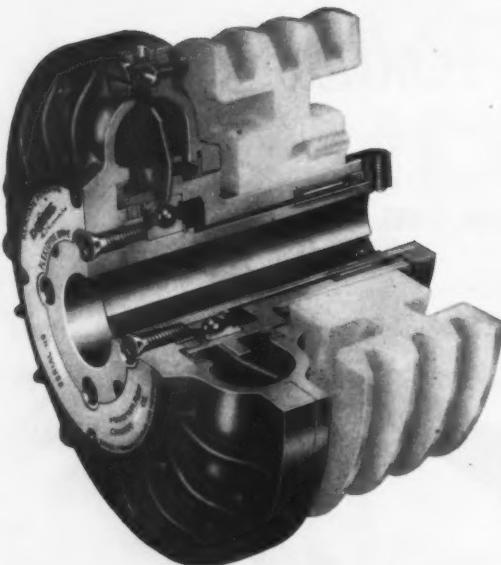
STEEL CORPORATION

MILL and OFFICES: 7140 BANDINI BOULEVARD • LOS ANGELES 22, CALIFORNIA

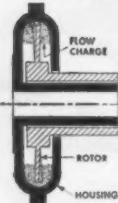
RAYmond 3-1344

... for more details, circle No. 25 on Reader Service Postcard

**WHAT'S YOUR
PROBLEM?....**



HOW FLEXIDYNE WORKS



The "dry fluid" in Flexidyne is tiny heat-treated steel shot. A measured amount, called the "flow charge," is contained in the housing, which is keyed to the motor shaft. Inside the housing is a rotor, free to revolve relative to the housing, but connected to the load.

When the motor is started, centrifugal force throws the flow charge to the perimeter of the housing, packing it between the housing and the rotor, which transmits power to the load. Initial slippage is momentary. Housing and rotor become locked together and achieve full load speed without slip and at 100% efficiency.

CALL THE TRANSMISSIONEER — your local Dodge Distributor. Factory trained by Dodge, he can give you valuable help on new, cost-saving methods. Look in the white pages of your telephone directory for "Dodge Transmissioneers."

- Overheated motors?
- Excessive belt maintenance?
- Breakage of materials being processed —like thread, wire, paper?
- Expense of oversize or high torque motors?
- High demand rate?
- Expense of reduced voltage starters?
- Clutch trouble?
- Breakage of transmission parts due to instantaneous shock loads?
- Damage and recurring down-time from overloads?

FLEXIDYNE

THE DRY FLUID DRIVE

It is no longer necessary to accept the destructiveness—the costliness—of conventional starting in the mechanical transmission of power. Flexidyne changes that!

Flexidyne is the new way to start loads *smoothly*—to protect against shock and overload—to save power—all *without any sacrifice of efficiency at full load!*

This revolutionary development is ushering in "the day of the soft start"—which can mean thousands of dollars to you in equipment savings and in better, more economical operation.

Flexidyne is available, off the shelf, in Drives and Couplings. Capacities range from fractional to 1,000 hp. Ask your local Dodge Distributor or write us for technical bulletin.

DODGE MANUFACTURING CORPORATION, 6600 Union St., Mishawaka, Ind.

DODGE

of Mishawaka, Ind.



...for more details, circle No. 26 on Reader Service Postcard

WESTERN INDUSTRY — March 1958



Increasing deoxidation—a key step in the manufacture of new 4-D Wrought Iron.

*Now—from Byers Research—
an even better Wrought Iron
for modern corrosion control—*

new 4-D wrought iron

Out of the laboratory and into production comes a newly formulated Wrought Iron to strengthen man's arsenal of corrosion resistant weapons.

New 4-D Wrought Iron is at least 25% more corrosion resistant than standard Wrought Iron—long an industry standard for superior corrosion resistance. This significant metallurgical advance is the result of 17 years of continuing research by Byers metallurgists.

And here's what it means to you.

Seventeen-year in-service and laboratory tests prove that 4-D Wrought Iron is superior not only to standard Wrought Iron, but has much greater corrosion resistance than other materials which are sometimes offered as substitutes. Thus, the economy of using standard Wrought

Iron can now be compounded through the use of new 4-D Wrought Iron.

In addition to increased corrosion resistance, new 4-D Wrought Iron has greater uniformity and improved physical and mechanical properties. This is attained by substantially increasing the deoxidation of the base metal, increasing its phosphorous content, and using a more siliceous slag.

And the price of new 4-D Wrought Iron? No increase. Despite higher production costs, the price of Wrought Iron will remain the same.

Write us for new 4-D Wrought Iron literature, or contact the Byers representative for complete details. A. M. Byers Company, Clark Building, Pittsburgh 22, Pa.

BYERS Wrought Iron Tubular and Hot Rolled Products

ALSO ELECTRIC FURNACE AMBALLOY STEEL PRODUCTS AND PVC PIPE

Corrosion costs you more than Wrought Iron

... for more details, circle No. 27 on Reader Service Postcard

**All from one source
...and fast**



More than 20 kinds of sheets

A single sheet or a truckload. Pattern sizes or cut-to-order. You get what you want—on time—when you order from your nearby Ryerson plant.

Ryerson offers an unusually wide range of gauges and patterns in more than 20 kinds of sheets, including: tight-coat galvanized you can form without fear of flaking or peeling . . . bright-finished stainless in time-tested Allegheny metal . . . hot and cold rolled carbon steel . . . Ryex Expanded Metal, standard, flattened and grating. Ryerson also offers bars and band iron, tubing, angles, channels, etc.

In addition, Ryerson can supply machinery and tools to meet every requirement of the sheet metal shop.

For all your steel requirements, it pays to call Ryerson.



RYERSON STEEL

Other Products in Stock: Carbon, alloy and stainless steel — bars, structural, plates, sheets, tubing, industrial plastics, machinery, tools, etc.

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • WALLINGFORD, CONN. • PHILADELPHIA • CHARLOTTE • CINCINNATI • CLEVELAND
DETROIT • PITTSBURGH • BUFFALO • INDIANAPOLIS • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

...for more details, circle No. 28 on Reader Service Postcard



TIME SAVED—This wheel truing machine trims and rounds "flat" wheels in an hour, while they remain on locomotive. Saves off-on time.

MONEY SAVED—With Dick Tracy precision, all engine parts are critically inspected by Zyglo, Magnaglo or Magnaflux before assembly.

Saving pennies can mean your survival

The West's (and the world's) largest diesel maintenance shop tells how to save money in "small" ways . . .

SAVING pennies can mean survival. Yes, like many industries in the West, the Santa Fe Railway diesel maintenance shop at Barstow, Calif., is hunting ways to cut costs. And this largest shop of its kind in the world has found you can save pennies in numerous "small ways."

So get out your cost reduction notebook and jot down these penny-saving ideas. They can add up to thousands of bucks . . . in your pockets.

First, Santa Fe knows that good records pay off. As in a medical office, individual records are kept on each of the 600 "patients" coming in for inspection and maintenance three to six times a month.

The records tell at a glance what has been done . . . and what should be done . . . to keep the engine in tip-top health. This good record system saves lots of time and money.

Then, there is the fuel consumed in the engine. Saving a penny here can sure add up.

Lyle B. English, superintendent of Barstow shops, reports research workers have found an "economy fuel" that allows maximum operating efficiency at a cost saving of one per cent. Sounds infinitesimal. Yet this saving amounts to about \$40,000,000 a year to the rail industry.

Economy fuel was developed by several major U. S. oil companies, working with the Santa Fe and some other railroads. The fuel is a blend of "straight run," or uncracked, fuel with cracked diesel fuel. Previously, uncracked fuel was used.

English, with 14 years of experience doctoring diesels, has another efficiency tip. He believes mixing fuels of different manufacturers is detrimental to engine operation. And he believes the same thing of mixing lubricating oils of different manufacturers.

"It isn't that any one product may be superior to any other one," he counsels. "It is because the consistency of one producer's product is not always compatible with another's, whether dealing with oil or with fuel."

English said records indicate that mixing oils or fuels may cause:

- (1) lacquering of the valves; and
- (2) reduced life of lube oil filters.

Both mean quicker engine "tear-downs" and much higher cost of maintenance.

While English decries mixing of different fuel or oil products, he reports a practice which would seem to contradict it.

"All our lube oil here—dirty, with carbon and with water—is saved. It drops into reclaiming sumps and is

channeled into tanks for shipment, reprocessing and re-use."

A word of caution here. It is important, English advises, to have the same manufacturer reclaim and process the oil to avoid later "mixing of oils and subsequent 'incompatibility'."

The new "economy" fuel with a one per cent saving has been thoroughly tested with these results:

- (1) lower cost;
- (2) hotter-running engines;
- (3) more power.

However, *Tom Willis*, day round-house foreman at Barstow, concedes use of the fuel does result in more carbon deposits, but the fuel is still classed as a "plus." And the carbon is readily removed with the lube oil filters.

One of the cheapest precautions in maintenance work, Willis believes, is use of oil filters. At Barstow, the elongated diesel filters are replaced in every engine about three times a month.

"Particularly if you're using detergent oil," Willis says, "it's important to get that old filter out of there and a new one in."

With detergent oils, rather than mineral ones, carbon and other foreign products are cleansed loose and moved with the oil through the engine.



TIME SAVED—Fork lift carries cylinder assembly jig, ready for installation, right to site.

Chances of pieces of these foreign bodies clogging a filter are high, hence the desirability of frequent filter changes.

To clean engine parts, certain cleaning chemicals, tested and recommended by research workers, are mixed to proper ratio with water and heated by steam coils. A tray containing dirty engine parts is lowered by crane into the vat and cleaning action is stimulated when the solution is agitated by air or mechanical means.

All engine parts are critically inspected by Zyglo, Magnaglo or Magnaflux before any assembly work is undertaken.

By these means, a liquid or powder is sprinkled or sprayed on each piece of material, preparatory to examining for visible flaws. Like a Dick Tracy detective who always gets his man, Zyglo, Magnaglo or Magnaflux always catch the flaws.

Three basic, but extremely important, tests are performed on each diesel that comes to Barstow for care.

The Blotter Test involves taking the "stick" from the crankcase of each diesel unit and allowing one drop of oil to drop on a blotter. One blotter "belongs" to each unit and allows for a continuing comparative "color check" of the oil. Today's oil drop can be compared, for example, with one made 10 months ago by the same diesel unit. It's right there on the same blotter record.

A Viscosity Test, performed with oil taken from the crankcase, gives indication of whether fuel dilution or oxidation has taken place.

And a Fry Test, in which a few ounces of oil are heated on a frying pan allows the mechanic to listen for "cracking" to determine whether any water has leaked into the crankcase.

All these tests, and others, help skilled mechanical workers diagnose the health of the diesel patient.

From the time a Santa Fe diesel glides into the Barstow shops, under-

going a bath, fueling, sanding, oil change and thorough inspection, its schedule is planned.

Its length of stay, of course, depends on whether it requires a monthly, quarterly, or semi-annual checkup. The diesel can be in-and-out in about nine hours—or it may take as many as 17 to put the 6,000 diesel "horses," encased in four units, in readiness.

Most of the diesel-electric locomotives that are entrusted to the care of English and his general foreman, Bill Luginbill, are General Motors products. Some are manufactured by Alco.

But the principles of care of these, and those of Cummins or Fairbanks, Morse, are similar.

The diesel engine drives a generator which in turn activates traction motors at the wheels of the locomotive. That's how the power gets to the wheels. And that's how a train moves.

These traction motors, which are utilized for both power to propel the locomotive and in generation as dynamic braking, constitute a major part of the repair work done at Barstow. Willis terms them: and valve blows, the biggest headache.

"Valve blows" necessitate work similar to what would be done on your automobile when a valve no longer acts properly.

The Santa Fe is continuing research and experimentation into this field, hoping to develop or discover a valve which offers greater opposition to "blow." Currently, the Santa Fe is using stellite valves on some of its diesels.

When replacement of a cylinder assembly is required, the Barstow forces handle the chore in modern, assembly-line fashion.

A 16-cylinder assembly has already been prepared and is awaiting use. Its heavy and intricate parts were assembled on a "jig," which precludes need of a double movement. When a diesel unit requires an assembly, fork lifts

and overhead cranes combine to lift the "jig" and carry it, ready for installation, right to the site.

The initial assembly work was done on the very form which was used to move it.

Today, mileage and inspection records of about 45 diesel locomotives will be examined at Barstow. And running maintenance will be performed before the 45 diesel locomotives are back in service on Santa Fe rails.

Should one or more of the patients arrive with a "flat" wheel, it will have been guided to an ultra-modern "Wheel Truing Machine," where a cutting lathe will trim and round the locomotive wheels to perfect shape in an hour.

The machine trims 1/200,000 of an inch off the steel in about a third the time the previous method demanded. Previously, wheels would have been removed from the locomotive, then "set-up" for trimming and finally replaced on the locomotive. Now the locomotive rolls on rails up to the machine and just stands there while the job is done.

Some of the pennies saved prudently in efficient operation helped Santa Fe purchase this equipment. The machine's saving in turn will allow other new developments to be spurred along and ultimately adopted in a pattern of railroad progress.

And, as with any free enterprise operation, it's progress that pays its own way.

MONEY SAVED—Day Foreman Tom Willis compares new and used oil filters. Frequent change saves money in long run.





JUST PART OF THE CROWD of the hundreds of participants at the 10th annual Industrial Engineering Institute held recently at the Berkeley and Los Angeles campuses of the University of California. Purpose of the conference was to present to industrial engineers and managers the latest developments in research and practice in engineering fields. The program was presented by various business, engineering and industrial departments of the University of California in cooperation with the **American Institute of Industrial Engineers, The American Society of Mechanical Engineers, Society for Advancement of Management,**

American Society for Quality Control, American Material Handling Society and American Society of Tool Engineers. Robert B. Andrews was general chairman of the Berkeley and Los Angeles sessions; Edward C. Keachie, chairman, Berkeley sessions; E. Paul DeGarmo, chairman, Berkeley planning committee and Ralph M. Barnes, chairman, Los Angeles planning committee. Proceedings of the conference will be available soon from the University Extension, University of California, Los Angeles 24. Price: \$3.50 each. Advance requests will be accepted.

10th annual

Industrial Engineering Institute



Left to right: Lee S. Whitson, director of manufacturing, Toro Manufacturing Corp.; Hal F. Downie, president, San Francisco-Oakland chapter of American Institute of Industrial Engineers; Donald C. Demangate, chief industrial engineer, General Water Heater Co. Whitson spoke on "Tailoring Industrial Engineering to the Company's Needs." The speaker told how the effectiveness of the industrial engineering function is measured by its contribution to attainment of immediate and long range company goals and objectives. Demangate discussed the role of the industrial engineer in a small company . . . and how he must attain his objectives in cutting costs by displaying confidence and authority and by being a "jack of all trades." Downie was chairman of the Whitson and Demangate session.



Left to right: E. Paul DeGarmo, chairman, Berkeley planning committee; Robert Gordon Sproul, president of the University; and Edward C. Keachie, chairman, Berkeley sessions. These men presided over the institute which included talks (in addition to those at left) on "How Industrial Engineers Can Be of Most Use to Management," "Applying Mathematical Techniques to Industrial Engineering Problems," "Use of Digital Techniques in Industrial Control Systems," "Cargo, Containers, and Trades Routes," "Automatic Manufacturing and Its Implications to the Small Businessman," "Planning for Future Expansion," "In Search of a Solution—Cerebral Popcorn or Systematic Logic?", "The Impact of Numerically Controlled Machine Tools," and "Practical Implications of Human Relations Research."

Left to right: John E. Angle, (speaker) vice president, industrial engineering, United States Steel Corp.; Dr. Lillian Gilbreth (guest), Morrough P. O'Brien, Dean of the College of Engineering, Berkeley; E. Paul DeGarmo, Chairman, Division of Industrial Engineering, Berkeley.



Left to right: James Cummings, associate in industrial engineering; James T. Lapsley, Jr., associate professor of Industrial Engineering; James R. Bright, lecturer on Industrial Management, Graduate School of Business Administration, Harvard University; Robert A. Bowman, chairman, San Francisco section, American Society of Tool Engineers; Richard Ceser, chief industrial engineer, McCulloch Motors Corp., Los Angeles; George Redman, associate in industrial engineering; James S. Campbell, Associate Professor of Industrial Engineering.





FRANK THARP
Elec. Machy. Maint. Co.



E. J. GRASSIE
General Electric Co.



DR. HENRY L. LEE
Epoxylite Corp.



CHARLES H. HAYS
Electrical Estimators Inc.



KING D. CHRISTOPHER
Clark Controller Co.



E. E. CARLTON
State Safety Division

March 27-29 . . .

Electrical Maintenance Conference

"Small Industry Looks at Maintenance of Electrical Equipment"

Chairman—**Frank R. Tharp**, general manager, Electric Machinery Maintenance Co. **Panel members**—**E. J. Grassie**, sales manager, General Electric L.A. Apparatus Service Shop; **Dr. Henry L. Lee**, Epoxylite Corp.

Primary objective of session will be to point out importance of maintenance to small industries, indicating they have the same problems with electrical equipment as large industry does, with same expensive "breakdown hours." To reduce this problem in small industry, session will point out two prime causes of electrical failure and show basic preventive measures. A simplified check-off list will be demonstrated as an example to show the initial steps to be taken.

"How to Estimate Additions and Expansions"

Chairman—**Charles H. Hays**, past president, Electrical Estimators Association of Los Angeles County. **Panel members**—**Paul Diedrich**, president, Olympic Industrial Electric Co. of Los

Angeles, and **Edwin M. Brose**, Estimatic Corp. of Denver, Colo.

Subjects will include estimating new plant additions; estimating additions to existing plant electrical systems; estimating by use of IBM equipment.

"Know Your Electrical Codes and Safety Orders"

Chairman—**King D. Christopher**, general manager, The Clark Controller Co., Los Angeles. **Panel members**—**E. E. Carlton**, head of Electrical Section, State of Calif., Division of Safety; **Arthur C. Veit**, supervising electrical engineer, Los Angeles County, Division of Building and Safety; **G. A. Wintz**, chief electrical inspector, City of Los Angeles, Department of Building and Safety; **L. E. LaFehr**, senior electrical inspector, City of Alhambra.

Subjects will include regulations of State and County, the large city and small . . . and the relationships and use of the electrical codes.

"Electronic Equipment Requires Maintenance"

Chairman—**K. Lee Alvey**, AiResearch Manufacturing Co. **Panel**

members—**George W. Haven**, Electronic Maintenance Co.; **Paul Christiansen**, and **E. O. Reed**, General Electric Co.

Session will show proper operation and techniques of electronic equipment and will cover all types of such equipment . . . including counters, timers, motor controls, spot welders, induction heaters.

"Protective Devices Must Be Properly Selected and Maintained"

Chairman—**T. P. Regas**, sales manager, Bulldog Electric Products of Los Angeles. **Panel members**—**Hugh Diamond**, manager of sales service section of Bulldog Electric Products Co., Detroit, Mich.; **H. E. Pike**, sales manager, Chase-Shawmut Co., Newburyport, Mass.; **Frank Huttinger**, chief application engineer for the Small Circuit Breaker Division, I-T-E Circuit Breaker Co., Philadelphia, Pa.

This conference will be divided into three portions covering the major areas of activity in the protective devices field, namely: Fusible Devices, Fusing and Circuit Breakers.

Sessions on Thursday include:

9-10:30 a.m. and 7-9 p.m.—"Small Industry Looks at Maintenance of Electrical Equipment"—Chairman, **Frank Tharp**, Fluorescent & Floodlight Maintenance Co.

10:30-12 noon and 7-9 p.m.—"How to Estimate Additions and Expansions"—Chairman, **Charles H. Hays**, The Electrical Estimators, Inc.

2:30 and 7-9 p.m.—"Know Your Electrical Codes & Safety Orders"—Chairman, **King Christopher**, The Clark Controller Co.

3:30-5 and 7-9 p.m.—"Electronic Equipment Requires Maintenance"—Chairman, **K. Lee Alvey**, AiResearch Mfg. Co.

7-9 p.m.—"High Power Factor Can Pay Big Dividends"—Chairman, **William H. Warren**, Jr., Southern California Edison Co.

Sessions on Friday include:

9-10:30 a.m. and 7-9 p.m.—"Protective Devices Must Be Properly Selected and Maintained"—Chairman, **T. P. Regas**, Bulldog Electric Products of Los Angeles.

10:30-12 noon—"High Power Factor Can Pay Big Dividends"—Chairman, **William H. Warren**, Jr., Southern California Edison Co.

1-2:30 p.m. and 7-9 p.m.—"Electrical Insulation, Basic Concepts, and Proper Maintenance"—Chairman, **Kenneth T. Shaw**, Westinghouse Electric Corp.

2:30-4 and 7-9 p.m.—"Maintaining Proper Standards of Lighting Will Assure Peak Production"—Chairman, **Urban Beh**, Consulting Electrical Engineer.

7-9 p.m.—"Large Industry Plans Maintenance to Reduce Breakdown Losses"—Chairman, **W. E. Cline**, General Electric Co.

7-9 p.m.—"Maintenance of Electrical Equipment in Commercial Buildings"—Chairman, **Edmund Lanski**, I-T-E Circuit Breaker Co.

Saturday sessions include:

9-10:30 a.m.—"Large Industry Plans Maintenance to Reduce Breakdown Losses."

10:30 a.m.-12 noon—"Commercial Buildings Look at Maintenance of Electrical Equipment."



ARTHUR C. VEIT
Los Angeles County



K. LEE ALVEY
AiResearch Mfg. Co.



PAUL CHRISTIANSEN
General Electric Co.



EDWIN O. REED
General Electric Co.



HUGH DIAMOND
BullDog Elec. Products Co.



H. E. PIKE
Chase-Shawmut Co.

Also at Shrine Hall, L. A. . .

Electrical Industry Exposition

"High Power Factor Can Pay Big Dividends"

Chairman—William H. Warren, Jr., area power engineer, Southern California Edison Co. *Panel members*—J. F. Miller, application engineer, General Electric Co.; Carroll M. Cole, engineer of customer equipment service, Dept. of Water and Power; Milton A. Brenner, Brenner-Fiedler and Associates; Phil A. Belsky, distribution system engineer, Westinghouse Corp.

Brief discussion of "What Is Power Factor?" will headline sessions. Case histories and dollars-and-cents approach will be presented on advantages of correction—both from industrial distribution standpoint and a utility rate advantage standpoint. Tracking down power factor will be third item of discussion, and will include engineering approach toward evaluation of power factor using recording and indicating instruments.

"Electrical Insulation, Basic Concepts and Proper Maintenance"

Chairman—K. T. Shaw, district maintenance sales supervisor, Westinghouse Electric Corp.

WE'LL SEE YOU THERE, PARDNER . . . Look us up at Booth 113-A. We'd like to have a chat with you and to give you some literature that will help you save time and money. And we'd like to jaw about the amazing displays that'll be poppin' all around us. Sure be some sights to see! So come around and let's compare notes.

FRANK HUTTINGER
I-T-E Circuit Breaker Co.

K. T. SHAW
Westinghouse Elec. Corp.



G. L. MOSES
Westinghouse Elec. Corp.

URBAN BEH
Consulting Engineer



Session will feature G. L. Moses, manager, services department of Westinghouse Electric Corp. at East Pittsburgh, Pa. Moses is one of the foremost authorities on electrical insulation, and has written more than 150 technical papers and articles on the subject. He will devote ample time to answering questions from the audience.

"Maintaining Proper Standards of Lighting Will Assure Peak Production"

Chairman—Urban Beh, consulting engineer. *Panel members*—Joe Platt, Holophane Co.; A. L. Pryor, Southern California Edison Co.; Frank Miller, Grayson Control Division of Robertshaw Fulton Co.

Subjects will include: Lighting design; use of lighting in outdoor applications; modern trends in lighting maintenance.

"Large Industry Plans Maintenance to Reduce Breakdown Losses"

Chairman—W. E. Cline, manager, Los Angeles Apparatus Service Shop, General Electric Co. *Panel members*—Al Jenkins, substation supervising engineer, Southern California Edison Co.; Don Higgins, electrical engineer, American Potash & Chemical Corp.; P. E. Fisher, Western regions manager, Service Shops Dept., General Electric Co.

Subjects will include transformers,

regulators and oil circuit breakers; control and switchgear; rotating equipment—a.c. and d.c. motors and generators.

"Maintenance of Electrical Equipment in Commercial Buildings"

Chairman—Edmund Lanski, application engineer, I-T-E Circuit Breaker Co. *Panel members*—Kenneth G. Blessing, supervisor of direct sales of air conditioning and refrigeration division, Worthington Corp.; W. R. L'Hommedieu, I-T-E Circuit Breaker Co.

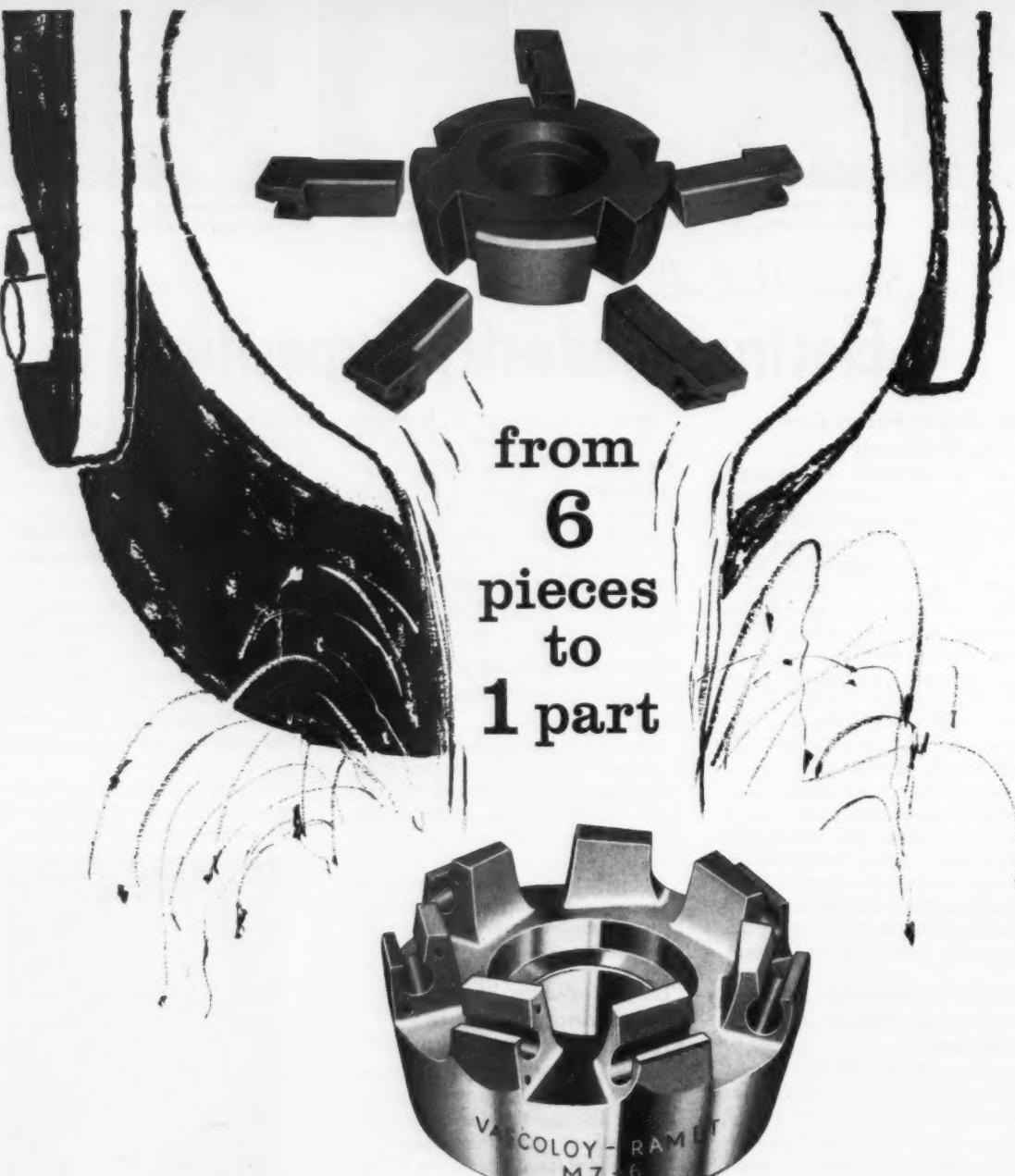
Subjects will include air conditioning of buildings and application, selection and care of circuit breakers.



PAUL H. HENRICHES
Southern California Edison Co.
General Chairman

JOE PLATT
Holophane Co.

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WESTERN INDUSTRY — March 1958

THE IDEA of venting a fire to kill it rather than make it blaze, is gaining wide acceptance by Western industry.

Principle of venting industrial fires is not entirely new. However, wide development of this principle has suffered from a lack, until now, of proper and adequate equipment. Consequently, most fires in Western industrial factories are still "vented" the slow, clumsy, dangerous and archaic way—by fire fighters risking life and limb to knock holes in factory roofs with axes, saws or pneumatic drills to release pent-up heat, smoke and fire.

When there is not sufficient time to make enough holes to rid the plant of accumulated smoke and fire, the entire building is often "soosed" with water—about 20 times more than necessary—to extinguish the blaze. Thus, in-plant fire damage and loss is generally tripled—from the fire, the smoke and the water!

In cases where an insulated structure is completely unventilated, and it is impractical even to hack away at the roof, intense unreleased heat is

Western plants can kill fires by process of venting them

Venting process removes smoke and heat as soon as it is generated.

forced into every area of the building, carrying with it suffocating smoke and fumes and superheated air that usually start "flash fires" throughout the entire plant.

With a dozen or so fires burning all at once, any unventilated structure soon becomes a blazing inferno, and in-plant temperatures often zoom to 2,500 deg. F.—enough to melt four tons of steel!

However, since the human body can withstand a maximum of only 300 deg. F.—and this only for a few minutes—it is easy to understand why fire fighters dare not enter such a building, much less try to fight a series

of fires in it. Two or three whiffs of such super-heated air can cause instant death! Such intense unreleased heat and pressure can also cause as much plant and property damage as the fire itself.

The annual enormous loss of human life, and millions upon millions of dollars worth of valuable Western industrial plants and properties that each year literally "go up in smoke," could be cut in half by the simple expedient of providing "holes" already cut in the plant's roof, so that fire fighters could control in-plant fires *at their source!*

Except in the case of an explosion, *no building ever catches fire from end to end all at once!* In-plant fires always start small and then spread. Real



ELECTRA MOTORS, INC., installation of CO/2046 Colt clear-opening adjustable louver ventilators. Drain channels stop rain.

NARDON MFG. CO. has 28 adjustable louver ventilators in its sawtooth roof. These vents can be installed on all types of roofs.



hazard of industrial fires is *small fires spreading!* This need never happen when a plant is equipped with dual-purpose ventilators. One such type of ventilation is made by Colt Ventilation of America, Inc., and installed in several Western plants (see photos).

Made of hardened anti-corrosive aluminum alloy, the dual-purpose vents are controlled by a fusible link designed to "break" at 158 deg. F. or any pre-determined temperature.

Under the strain and stress of an actual fire, each vent will automatically open by its own weight, and will

present no obstruction to the free flow of air. Control, however, can also be manual, if desired.

Available in three sizes, dual-purpose vents will not only remove smoke, but will also rid heat from a building at the rate of 2½ million Btu. per hour. Size of vents used, and frequency of installation, depends, of course, on individual plant circumstances and requirements.

Cost of installation for both factory ventilation and fire precaution usually averages a little under 40 cents per sq. ft. of factory floor area, with vir-

tually no operational costs, since Colt's dual-purpose system has no working parts or mechanized units to run up power bills or repair costs.

Vents should be located at the highest point in the roof, and may equal from 2 to 5% of the floor area. Stack velocity (rate at which air at 2,000 deg. F. will pass through an opening) averages 1,500 ft. per min.—or enough to remove smoke and heat as soon as it is generated.

In this way, fires are vented—and plants saved. It's a process that can work in your plant.

Air-driven router gives simple answer to complex problem

By H. T. HALLMARK
Senior Manufacturing Research Engineer
Convair-Fort Worth
A Division of General Dynamics Corporation

AN AIR-DRIVEN router development provided Convair with a very simple answer to a complex problem. The problem was machining lap splices on contoured B-58 bonded panels.

Because of the severe contours and size, conventional mills were unable to provide satisfactory lap slices.

This light, compact router not only proved to be an excellent answer to the problem, but also eliminated expensive tooling jigs and fixtures necessary to hold the panels in location. The

Machining lap splices on contoured B-58 bonded panels is easy with this setup.



router is completely supported by the panel which it is cutting and can operate with factory air pressure for power. Its size and weight, 16½ lb., eliminated any special considerations for storage or working space.

The router moves under its own power. It is driven by a knurled wheel which rides on the surface being machined. The knurled wheel is powered from the same shaft as the cutter, thereby removing cutting variations caused by air pressure changes. The knurled wheel provides .002-in. travel for each cutter revolution.

Operating equally well on aluminum or fiberglass honeycomb bonded panels, the cutter holds a plus or minus .003-in. tolerance while transversing a 10-in. radius. Micrometer adjustment between two guide wheels on the panel side opposite the cutter and the knurled drive wheel on the cutter side determines the depth of cut.

Once set and started, the router needs little attention until the cut is complete. Maximum depth of cut is 2½ in., which is sufficient to meet current production requirements.

With a cutting rate of 3 ft. per min., several passes over the same edge can result in a variety of shapes, produced simply by changing cutting depth and cutters. Minimum labor, tooling, and manufacturing costs are all outstanding features offered by this small but important machine.

Steel straps, seals rob filchers of easy pickings

STEEL STRAPS and seals are worrying filchers who previously made an easy living from snitching commodities in transit. And a leading cosmetic firm which straps and seals

units before shipment is counting its blessings—and additional profits.

The Max Factor Company of Hollywood, Calif., got weary of having packages of lipstick and compacts broken into long before they reached their destination. Max Factor's name spelled magic—and a series of costly disappearing tricks.

Milt Jones, Max Factor's supervisor of shipping, was weary. Then, like a mirage, a solution slid into view. And like most great ideas, it was simple.

Nothing was changed in the packing process—it just went a step further to a Signode strapping table.

Here, in one day, one man seals and straps as many as 250 packages in a way that it would take an 800-lb. pull to loosen the ¾ x .015-in. strap of cold steel.

Now, anybody who wants Max Factor products must go and buy them—which might be unfair to package pilferers—but which speaks well of Signode steel straps.

The case is closed, as Signode steel strapping locks valuables inside this carton.



Corrugated box cuts packaging, shipping costs



Caterpillar parts snuggly in new package.

A NEW CORRUGATED PACKAGE has cut packaging costs considerably for the Caterpillar Tractor Co. of San Leandro, Calif.

Caterpillar formerly shipped 140-lb. precision fuel injection units in wood crates.

But the new corrugated package—consisting of a regular slotted container plus scored interior pads that lock into place to prevent shifting in transit—can now be loaded quickly by one man.

In addition to reduced packaging costs, Caterpillar's shipping costs have been reduced by the lower tare weight of the corrugated box. These boxes were designed and are supplied by Gaylord Container Corporation Division of Crown Zellerbach Corp.

A pocket whistle means you're wanted ... in this plant

WHEN YOU HEAR A WHISTLE at the Dow Chemical Co. plant in Pittsburg, Calif. . . . most likely it's coming from your own pocket!

And it doesn't mean you have pretty legs—it means you're wanted on the phone.

The "whistler" is a transistorized radio receiver about the size of a package of cigarettes. The receiver responds only to your own call number.

Installation of the wireless paging system has been completed recently. It allows upwards of 455 persons to be contacted individually anywhere in the plant or surrounding area,

through the operation of a small desktop radio transmitter.

The system was originally designed for the maintenance crew, which is scattered throughout the plant. And the radio receiver has worked so well that its use has now spread to the traffic and engineering departments.

Advantages of the wireless paging setup are that it can be installed at low cost (this one was done by Watson Communication Engineering of Richmond, Calif.) and it has a range over a mile.

The equipment is manufactured by the Stromberg-Carlson Co.



"Pagemaster" fits into breast pocket of this engineer, and whistles when he's wanted.



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PUMPS FOR INDUSTRY



...and now PACIFIC SUBMERSIBLE NON-CLOG SEWAGE PUMPS

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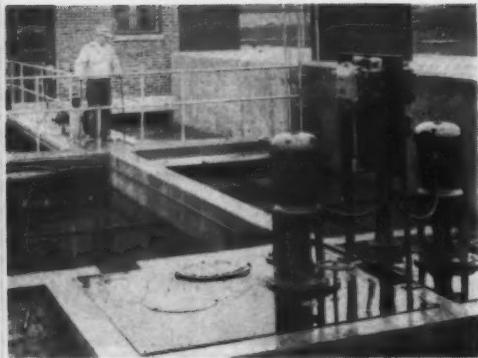
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Link-Belt's laboratory facilities where industrial waste samples are tested.

Here are answers to your waste, water problems

HAVING INDUSTRIAL WASTE and water problems?

Most Western plants do. But there are practical solutions . . . as detailed in the new motion picture, "Pure and Simple," released by the Link-Belt Co.

The new film highlights ways in which industry, user of over 80 billion gallons of water daily, can conserve

this natural resource by combating pollution, salvaging valuable by-products, re-circulating water and treating sewage wastes.

"Pure and Simple" shows how these water problems are solved by installations at chemical plants, oil refineries, food processing plants, steel mills, pulp and paper mills and one of Link-Belt's own manufacturing plants where the company operates a sewage treatment plant.

Specialized equipment is portrayed in action, and details of how various systems work are dramatized by animation. Link-Belt's experimental laboratory, where continuing sanitary engineering research is carried on, and where waste samples submitted by client companies are tested, is also shown. A pilot plant, which is available for loan to industries to determine treatment methods, is also available.

"Pure and Simple" has a running time of 19 minutes and is available on letterhead request for free showing to those companies or sanitary engineering organizations concerned with industrial waste problems. Write to the Public Relations Department, Link-Belt Co., Prudential Plaza, Chicago 1, Ill., to reserve a print for your showing.

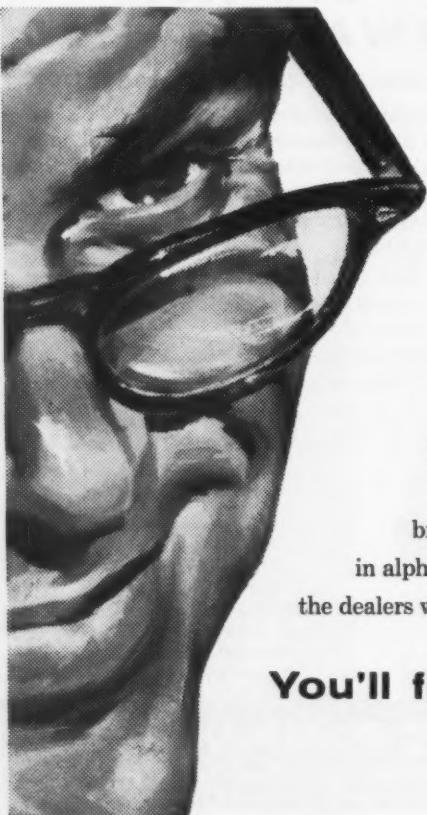
Save money— brush after buying

YOU BRUSH YOUR hair and your teeth and even your coat—ever thought of brushing the mill scale off angle iron AFTER you buy it? You should, it's cheaper.

Take Worley & Co. in Pico, Calif., for instance. They produce steel lockers. Now instead of buying angle iron that has been picked, they take advantage of the price differential and buy unpicked iron. The mill scale is quickly removed by brushing, and experience shows that one set of brushes processes over 164,000 ft. of angle iron. That's some saving.

The angle iron is fed in 20-ft. lengths over formed rollers, and passes under two heads of Osborn Master Wheels, 10 in. in diameter, with .020 steel wire. Two 2-hp. motors are used to drive the brushes at 2,200 rpm. with production rate of 150 ft. per min.

Result—hard mill scale is removed from 1 x 1 in. x 12 gage angle iron before assembly. Which means no flaking after painting.



Perhaps you've overlooked this convenient Yellow Pages service

The Yellow Pages list brand names under many product and service headings. If you're shopping for a particular brand, turn to the product or service heading and underneath, in alphabetical order, you'll find brand names listed, with the dealers who sell or service them.

You'll find it fast in the



...for more details, circle No. 31 on Reader Service Postcard
WESTERN INDUSTRY — March 1958

A Special

Western
Industry

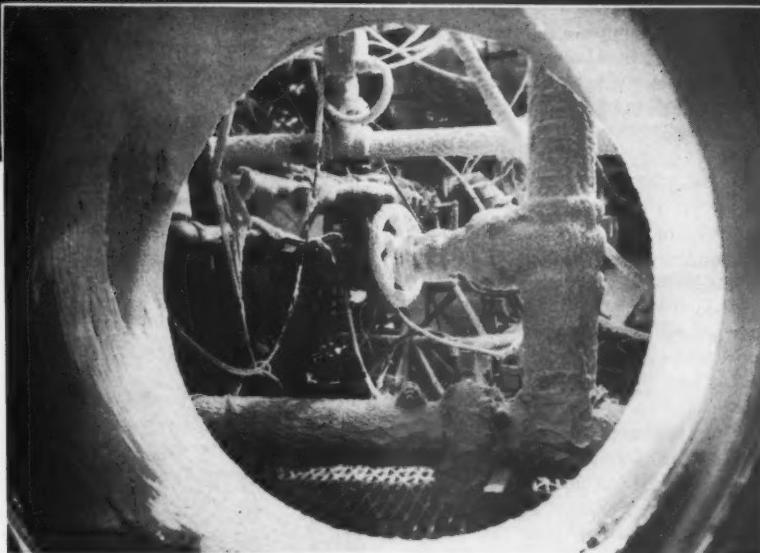
Report

CONDITIONED AIR

It Puts Profits In Your Pockets

Here's How:

- \$—Boosts production volume
- \$—Ups workmanship and product quality
- \$—Saves on inventory spending
- \$—Slashes rework and rejects
- \$—Adds life to all equipment
- \$—Lowers absenteeism
- \$—Pushes down cleaning and maintenance expenses
- \$—Reduces accident rates
- \$—Cuts initial building costs
- \$—Makes buildings last longer
- \$—Just plain helps everyone in your plant—including you—to feel better and work better



MOST DRAMATIC of jobs done by conditioned air is altitude test chamber where strato conditions are reproduced exactly.

Your Newest Production Tool— Indoor Climate "On Demand"

IN THE WEST, conditioned air is surging to the fore of industrial progress, proving it's a key ingredient for profit—the year around. But no plant executive can justify the expense of inside weather control in his factory "just because it's nice." You don't have to.

Man-made weather steps easily into your production picture, doing the job desired and usually showing you a profit. Brains, buildings and machines last longer and produce more when you give them a pleasant flow of air . . . designed especially for them.

The various and varying climates of Western areas are the first factors toward the installation of better indoor environments for working men and machines. Then there are the ever increasing and more exacting conditions required for every aspect of manufacture. Yes, your quality and quantity can suffer if you neglect air conditioning.

Look at the check list at left. It's not a lot of "sales talk." Controlled indoor weather can be your silent giant on the production line helping you to bigger and better profits.

So read on the following pages what WESTERN INDUSTRY editors have discovered after several months of talking to users of air conditioning equipment. You'll be surprised at what conditioned air can do for you.

What It Is...

LET'S GET ONE thing clear at the start. When we speak of conditioned air we mean much more than the simple blessing of your sweated brow with a fan or other elemental cooling devices.

Air conditioning is the cleansing and circulation of air; it is ventilation and the control of humidity and temperature. It is the designing of indoor climate to specifications, creating your desired inside-building environment.

With conditioned air you can "be where you will," obtaining the balmy clime of a South Pacific isle, the frigidity of an Alaskan winter, the heat and dryness of Death Valley, the dampness of a Rangoon monsoon, or even the disastrous atmosphere of altitudes to outer space, throwing in for good measurement the same timidity of oxygen you'd find, say, on the moon.

In most cases, of course, it doesn't involve quite such dramatic alterations of climate to suit your needs.

But whatever your demands, the principles by which they are served are basic.

This is how you make weather:

You take outside air, process it, then turn it loose in your plant.

If you want a lower temperature than the prevailing outdoors, you cool air by spraying it with cold water or by passing it over a cooled metal surface, usually copper piping. In the piping may be cold water or a compressed gas, such as Freon.

To warm up air coming from outside, pass it over coils containing hot gases, hot water or steam.

For drying air you can cool it below its dew point temperature so moisture will condense, or you can pass it over a hygroscopic chemical which absorbs moisture.

If a higher humidity is necessary, pass air through the mist of a water spray chamber.

Dust and other foreign particles in the air, such as odors, pollen, smoke and smog, are taken out of circulation with filters.

Actually, all the air doesn't come from outdoors, as your equipment usually reprocesses the indoor air along with some of the new outside air.

A set of blower fans and a system of ducts will spread your new climate evenly throughout your plant.



ENGINEERS PRODUCE BETTER, stay with you longer, when you give them top working climate. (Note ducts and outlets at top.)



MICROSCOPIC MACHINING demands closely guarded temperature and humidity; near dust-free standards are a must.

What It Can Do For You . . .

YOURS IS A RARE case, if your plant cannot benefit from using conditioned air in some part or manner.

Most likely you'll install a system for a special purpose, such as to allow extra close tolerances in metalwork. Contraction and expansion of steel from daily ups and downs in temperature can throw your measurements so far off as to drive you frantic with re-work and rejects. Cost you money, too.

Take aircraft parts. Their specifications are exacting, for they work at altitudes where overweight can mean death, and must measure to standards so high they may operate constantly at peak performance. No sloppy work gets into airborne equipment of any type these days.

Layne Tool, Inc., of Phoenix, Arizona, was well aware of this when it began subcontracting precision tooling parts for the flying industry.

Two problems faced *M. F. Silverthorn*, Layne plant manager. Tolerances on the parts to be made were demanded to .0001 in. and his employees needed protection from the scorching summer desert heats which climbed as high as 115 deg.

"Temperature can bob around like a jackrabbit in this country," says Silverthorn. "It often varies as much

as 30 or 40 deg. in a day. To top that, we have moisture conditions ranging from soaking rains to blinding dust storms."

And there was the problem of insulation. Most air conditioning experts will refuse to handle the job until your building is properly insulated. Indoor weather must be well controlled, as excess heat loss or gain through walls and roof can make the whole operation too expensive.

"So we insulated first," Silverthorn reports. "Our system was designed to maintain 76-deg. temperature with only a two-degree variation either way in any part of the shop. Humidity was set to stay at about 45%, and a medium amount of filtering was included.

"It's helped us grow," Silverthorn states. "We wouldn't think of being without it. We've never had to shut down for bad weather, or even during system installation. We get first-class work from men and equipment. No rust problem on work pieces or machines, either from wet air or sweaty hands. Dust is no bother, and this is good, for we run many grinding machines here on fine work that could easily be ruined by too much abrasive material in the air.

"We were most surprised, though,"

he continues, "when our absentee record for 1957 totaled zero. The comfort and health aspects of our air conditioning are the main reasons for that. And we know some of our top operators could move elsewhere for more money, but stay with us for the good weather we keep."

"At Layke," he says, "we like pleasant offices for management, too. But cool brains aren't the big thing, not here, for we know that we make no money in the office unless the men in the plant are producing for us. We could operate for a time without conditioned air here, but in a few years our entire operation, and our plant as well, would be obsolete. If we weren't using weather control as a production tool the competition would soon whip us."

THE HUMAN ELEMENT looms big in the Western production picture these days, from the standpoint of greater human efficiency and in getting and keeping high caliber personnel. Sales of air conditioning for these purposes took a particularly sharp rise last year.

Let's face it—a drowsy worker is a lousy worker. Warm weather is a time-loser for you, with heat enervation, goggle-fogging and trips to the water fountain. In winter, colds cost you dollars in absenteeism and bad work.

"Air temperature alone has a large



PACKAGING AND SHIPPING departments function more profitably in controlled weather. Less spoilage of merchandise, too.



LATHE AND OPERATOR keep closer control on quality, waste less time wiping moisture, cleaning dust when air is clean and temperature constant.

effect on the precision of skilled muscular acts as well as the execution of practiced logic," Dr. L. P. Herrington, Yale lecturer and research director of The Pierce Laboratory of Hygiene, told the first U. S. conference on indoor climate design at UCLA last year.

Production gains for employees with conditioned air are hard to nail down with exact figures. Air conditioning industry men and Western plant managers have reported rises estimated from 7 to 50% and an amazing average of 25% higher performance for an employee working in controlled climate.

Averages of owning and operating costs of air conditioning in new industrial buildings tell us that only a 1.3% jump in working efficiency is needed to pay for a complete year-round system.

Paying proposition? Yes, conditioned air is a "practiced hand" in the field of Western production. It can do for you what it's doing for . . .

Sperry Rand's new Western plant, for example. Smack in the middle of a desert, a completely automatic, year-round system was planned into the new windowless structure, with plenty of muscles for future expansion.

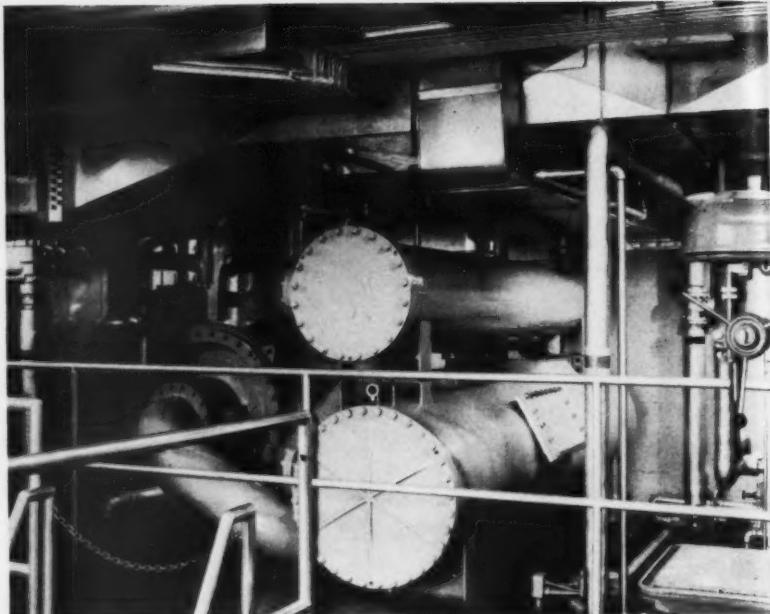
Fast savings were made immediately. "Leaving out windows cut our building costs," says J. R. Williams, plant facility engineer. "That gained us considerable floor space with no need for aisles next to windows. Best savings, however, came in cleaning and maintenance. With our clean-air, no-glass plant we got our cleaning contract at only 2.1c per sq. ft. per month."

Compare that cost with your own.

Upkeep is easy and Sperry's central type system needs just two quick checks a day. It runs day and night, keeping in-plant temperature at 76 deg. dry bulb, and humidity between 40 and 50%. The filters, planned oversize, need cleaning only six times a year.

"The human factor of conditioned air is an intangible, as far as measuring results," Williams reminds. "But we know it's a large reason for our record of never having failed to meet a production schedule. Other aviation industry men will know what I mean. Also, our absenteeism rate is extremely low. Our indoor weather helps us do these things."

PRODUCT CONTROL at the new smelting works of Aluminum Company of America at Wenatchee, Wash.,



CENTRIFUGAL REFRIGERATION unit, which supplies chilled water to air conditioning units for summer cooling, was slipped into this compact equipment space.



NO DUST PROBLEM HERE as these grinding machines are in an air conditioned room.



PACKAGED AIR UNIT (at top) keeps these milling machines in shape for precision work.

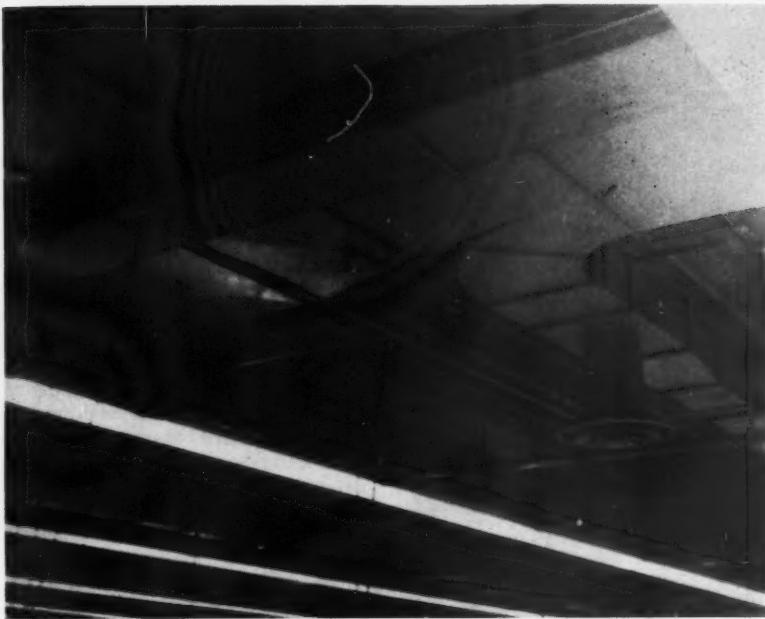
posed a climate problem. Alcoa's spectrograph rooms, where aluminum samples are tested, demanded a constant temperature of 75 deg. and a humidity of 40%.

It's tough weather at times in Wenatchee, and the air conditioning system was designed for minus 10 deg. in winter and plus 100 deg. dry bulb and plus 70 deg. wet bulb in summer. This system brings in 600 cfm. of outside air and mixes it with 2,200 cfm. of inside air, all of which is electrostatically and mechanically filtered,

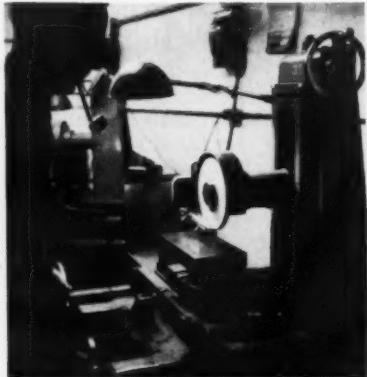
cooled and reheated or humidified to meet the set standards.

Versatility, you see, is basic nature to this terrific production tool. Conditioned air can be tempered "to your order" for any Western plant, no matter what the weatherman dishes out in your neighborhood—hot, cold, medium, wet or dry.

Special situations are always cropping up, of course. Air conditioning engineers tackle, and lick these, with enthusiasm that bespeaks a crusade—brought on by the recent warning of



THESE ARE THE "MUSCLES" of air conditioning, the ducts. These ducts carry "climate on demand" to any part of your plant, to up production and employee efficiency.



GRINDING MACHINES and abrasives like air conditioning as it keeps out foreign particles.



FEWER REJECTS, less rework for milling machines when air conditioning is in the picture.

Dr. Raymond Allen, UCLA president, that "man is creating a gigantic sewage system out of the earth's atmosphere."

IN LOS ANGELES—*The Garrett Corporation* devised a "clean room" in their mechanical research lab for testing small, or high precision equipment where even the smallest particles of dirt could wreck performance.

Present were the usual demons, the wetness, the dirt, the smoke, along

with the area's own peculiar phenomenon, smog. All had to be rigidly controlled.

"Our equipment was designed to hold temperature constant at 78 deg," says Jack Lawrence, lab supervisor, "and humidity at 35% year-round. It is also static-free and all but eliminates external vibrations."

Dust-free requirements were stiff, but met. The filtration system will take out particles one four-millionth of an inch in size (specifications: 99.95% free of anything over .3 microns)

which is about half the size of a particle of cigarette smoke. A speck of lady's face powder stacks up here like the Rock of Gibraltar.

Automation is air conditioning's best friend, it has been quoted among the experts of late. Vice versa on that, too, for some of the imaginative electronic machines being made and developed today cannot and shall not be able to function at all, except that they are furnished their own private working atmosphere.

Heat in monstrous quantities is usually the byproduct of a computer's "brainstorming." Relative humidity over 50% can mangle the accuracy of magnetic tapes.

IN PASADENA *Electrodata Corporation*, large maker of electronic computing equipment, makes it clear to customers that air conditioning is essential to the life and efficient operation of the equipment they sell. The company uses machinery which will produce 800 tons of conditioning in its own factory.

Any electrical equipment you use is better off in controlled climate.

IN PHOENIX—The first refrigerated tool and supply house in the Southwest was opened recently by the *Garrett Supply Co.*

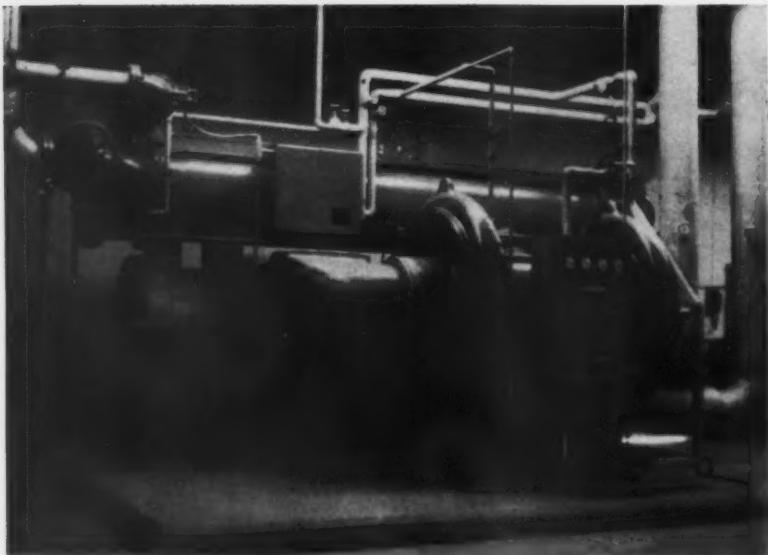
Benefits from this system include: (1) inventory turnovers have been reduced from 14 to 4½ times per year; (2) storage deterioration has been eliminated; (3) personnel efficiency has jumped; (4) delivery cost reduced . . . and many other benefits.

This supply house stocks rubber and metal goods, which formerly were affected by the fluctuating Arizona weather. But now rust and deterioration are things of the past.

The air conditioning system at this facility consists of five 15-ton factory packaged units, two for office space, three for the warehouse. Two cooling towers, of 25- and 50-ton capacities, serve this system.

(This system was fully described in the November **WESTERN INDUSTRY**, Pg. 45).

Other uses are found every day for man-made weather in specific, confined places. *AiResearch of Phoenix*, in testing gas turbine wheels at speeds up to 100,000 rpm., had to remove the intense heats created and keep a steady temperature to within one degree, in order to measure metal stress accurately. They did it with their "whirlpit," a concrete-incased hole in the floor and fast-moving refrigerated air passing through it.



CENTRAL SYSTEM compressor can be placed where you want. Automatic controls keep it humming.



PACKAGE UNIT serves this paint spray department with comfortable temperatures and air cleaned of fumes.



TESTING LABORATORIES make heavy use of controlled inside climate, especially in field of aircraft instruments. Temperature fluctuations could affect precision.

Putting It In Your Plant . . .

THIS IS NO do-it-yourself deal. You've decided that conditioned air is what you need to jolt up production in your plant, or maybe in some part of it: processing, assembly, testing, engineering rooms, tool rooms, or in your packaging and shipping departments. First thing to do is . . .

Call an expert, as the designing of your system is a job for nothing less than a specialized consulting engineer. Each installation is individual, with its own combination of requirements. Choose a qualified man, as he's your "prescription writer" toward a healthier business.

The design engineer must know every detail of your building, staff and operations, and he'll work closely with your own plant engineers to study the existing air situation and to decide how it should be changed.

If you're planning the system for a new building, he'll confer often with the architects, along with you, to make sure his layout will not interfere with the manufacturing process, and that proper flexibility is planned in for future changes or expansion.

How much it costs to install depends on a long list of variables, such as degree of control you want, your building, your processes, number of employees, and the outdoor climate of your area. Each weather control job must be carefully estimated.

Two main factors combine to determine your cost of conditioned air:

1. Heat load may be higher per square foot, due to type of processing or concentration of people. Since cooling is the removal of heat, the heavier this load the heavier the equipment you'll need to handle it.

2. Design conditions are what you ask for in the way of temperature and humidity.

An equation must be solved here by the designer—between your heat load, the outside weather conditions and your desires. If you want a steady 75 deg. inside, for example, that costs more to maintain than when you allow temperature to rise a little on the extra hot days of summer.

It's cheaper to install a system when building your new plant than to cram it in later. Air conditioning an existing structure means cutting through walls, going around obstacles, maybe mov-

ing machinery, keeping the plant in operation during installation, and so on.

Dollars and cents costs to you in this picture are tough to get, but John E. Haines, vice president of Minneapolis-Honeywell Regulator Co., has come up with these figures for "typical" situations:

For a new plant—costs of owning and operating the building, including heating, is \$1.92 per sq. ft. per year. Machinery and equipment, including depreciation, obsolescence, maintenance, and taxes, come to \$7.05 per sq. ft. per year. Biggest single cost in this typical factory is that of wages and fringe benefits—amounting to \$36.10 per sq. ft. per year.

Additional cost of owning and operating a complete year-round air conditioning system to run ten hours a day would cost only 46c per sq. ft. per year, or one per cent of the total.

This means that if the efficiency of the workers in the plant goes up only 1.3% the system will pay for itself. This is based on a 20-year life for the system.

For an existing plant—additional cost of owning and operating the year-round system rises 55c per sq. ft. per year, since it's a bit more costly to install, and the building probably offers windows that let in heat, and has poorer circulation and insulation.

It still pays because you'd only need 1.3% jump in worker efficiency to pay the bill.

These figures were based on a central system setup, which has the lowest operation cost. Remember, also, the figures vary with your own particular plant situation.

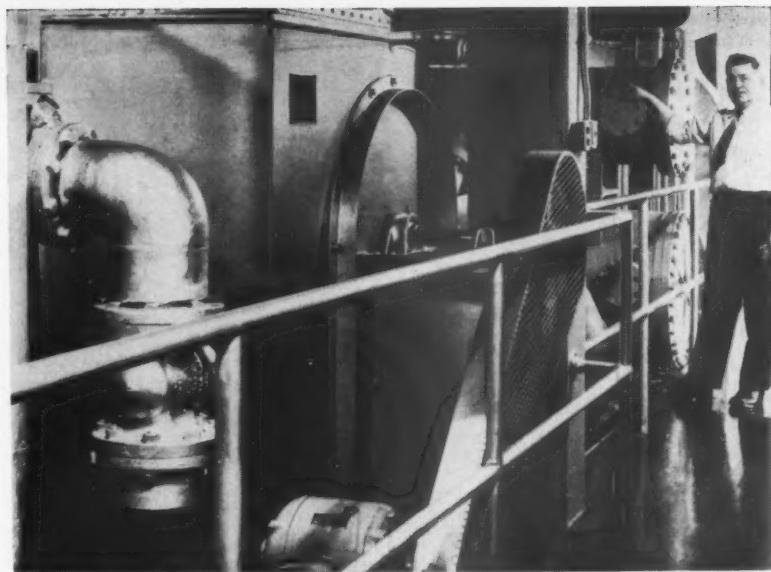
You can save on installation and operating costs for your general plant system by using the fact that factory temperatures don't have to be as cool as those in offices. By designing for higher temperatures, but lower humidity, for your summer months, satisfactory conditions can be obtained at lower costs. Other arrangements, such as spot or zone conditioning, air curtains, and ventilating setups for hot machines, can often be used to lighten your total climate costs.

Air Conditioning Equipment

There are five basic parts to your complete conditioned air system.

1. *Compressor*, which compresses a refrigerant gas. Then, as you let the gas expand, it takes the heat from the water or air just returned from the conditioned area.

2. *Pumps*. One circulates chilled water from compressor to air han-



AIR HANDLING EQUIPMENT is often placed on roof. Equipment is so silent you don't know it's running.



VENTILATING BOXES (as shown on the floor) help provide right climate for this paper factory.



COOLING TOWER is on the roof in this plant. This tower handles 6,750 gallons per minute, losing 22 deg. of heat to within 10 deg. of wet bulb temperature.

dling units in the factory. The other circulates condenser water, which carries away heat absorbed by the refrigerant, to the cooling tower.

3. *Cooling tower*, which cools the condenser water.

4. *Air handling equipment*, which contains filters, fans and cooling and dehumidifying coils, distributes the conditioned air through ducts and outlets to the desired areas of your plant.

5. *Heat chamber*, for cold weather. Also, this is needed for certain design conditions of humidity control. Say you wanted a steady 50% relative humidity. If the day was wet and cool outside, you might have to lower the air's temperature to 50 deg. to wring the extra water out of it by condensation. Then the air would have to be reheated for proper room temperature.

One other unit should be mentioned here, the steam absorption machine. It replaces the conventional compressor, and works directly off steam. If you've plenty of process exhaust steam from your plant, this machine can save you a tidy sum in operating costs.

Your system will fall into one of two general categories:

1. **Central systems**—feature a single set of machinery components chosen especially to condition your plant. For the larger (over 100,000 sq. ft.) plant this is probably your best bet. It is the most economical to run, lasts the longest, and can be planned for easy care of the component parts.

2. **Package units**—are self-contained units which can be placed at different points of your building, each serving its individual area. You won't find these used in the larger plants, as they don't last nearly as long as the

20-30 years you get from a central system. In smaller plants, however, and in existing plants not intended to be used for more than a few more

years, the package units come in handy. They are less expensive to install, this fact offsetting their higher operating costs.

Let's Look Ahead . . .

CONSIDER THIS: The main reason you build a building is to create an indoor climate in which a function can be performed more efficiently.

Therefore, isn't it logical to follow through with that purpose and create the most ideal climate possible?

The future promises greater demands on producers for larger quantities of higher quality goods in all fields, made under tougher conditions of standards, environment and competition.

The question is changing in many Western plant executives' minds from "What will air conditioning cost?" to "What will it cost to be without air conditioning?"

Some dangers of ignoring weather control as a vital production tool are:

a. Your particular manufacturing operation may become obsolete without it.

b. Your competitors may use it and beat you out with better stuff in bigger volume.

c. Your employee turnover rate may grow (costing as much as \$1,000 per new hiring in some cases) as competitors lure your best talents to more comfortable plants.

d. Your company safety record can't be as good as it could be, and you'll know your absenteeism rate is too high.

Yes, it'll probably pay you to get an estimate from your air conditioning dealer soonest. From his engineer's drawing board can come the design for your newest and most versatile production tool—conditioned air.

Air Conditioning Vs. Other Plant Costs

(Figures are for newer industrial building . . . typical owning and operating costs per sq. ft. per year.)

Salaries and Wages, Including Fringe Costs	=	\$36.10
Machinery & Equip.	=	\$ 7.05
Building	=	\$ 1.92
Air Conditioning	=	\$ 0.46

If Air Conditioning boosts working efficiency by as little as 1.3% . . . it will pay for itself!

OUR THANKS go to the many manufacturers, distributors and users of air conditioning equipment who supplied us with the facts for this section. Special thanks go to Mr. Leo Hungerford, past president of the American Society of Heating & Air Conditioning Engineers, Southern California chapter, who previewed our article. Mr. Hungerford is presently director of sales engineering for the Utility Appliance Corp., manufacturer of air cooling equipment.

A SPECIAL SECTION OF THE MARCH 1958 ISSUE OF WESTERN INDUSTRY, 609 MISSION ST., SAN FRANCISCO, CALIF. REPRINTS AVAILABLE AT 25¢ EACH UP TO TEN COPIES. PRICES ON LARGER QUANTITIES ON REQUEST.

Another Southern California Firm Selects VENTILATION BY COLT



ELECTRA MOTORS, Inc., Anaheim

Shown above is a recent installation of CO/2046 COLT Clear Opening Adjustable Louver Ventilators in the roof at Electra Motors, Inc., Anaheim.

If your building is hotter than blazes in warm weather and employee fatigue is costing you money, you have an air circulation problem. Here is a low cost answer effectively adopted by this firm and many others in Southern California. (If you're planning a new building, be sure to specify COLT.) Here's why:

EFFICIENCY AND ECONOMY—The COLT "CO" ventilator is unique in design and application . . . Sturdily built of anti-corrosive hardened aluminum. Full clear opening permits maximum possible passage of air. Top and side drain channels on louvers guard against rain. Adjustable louvers 100% rainproof when closed.

LIGHTWEIGHT—can be installed in any type of factory roof, weighs just 23 pounds.

NO OPERATING COSTS—built-in hand-operated control, no power required.

EXTRA FIRE PROTECTION—A simple additional feature gives you dual function. Louvers open down automatically in event of fire. Wide, unrestricted free area allows immediate escape of heat and smoke. (Authorities agree that fire control in industry must include modern and efficient fire venting.) Many other features are fully described in free pamphlet, "Some Aspects of Fire Prevention in Industrial Buildings," by M. J. Reaney.

ANOTHER FINE PRODUCT BY



COLT VENTILATION OF AMERICA, INC.

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A wide variety of ventilators to suit every need.



Send also for
Free Technical Manual
giving full details
of the COLT system
and equipment used.

... for more details, circle No. 32 on Reader Service Postcard

IF YOU CAN'T FIND THE ELECTRODE YOU NEED



... among Airco's complete line of over 100 different types, comprising of more than 450 sizes, lengths and grades, then the chances are it doesn't exist and we'd like to hear about it.

Most likely, if there is a need for a new and different electrode, Airco is already at work on it; for every year new, improved versions are added to the line. New Easyarc 30, for example, is a high-speed electrode that deposits 6 lbs more metal per hour than any other electrode.

Wherever you are located, you'll find Airco's complete line of electrodes easily and conveniently available through a nationwide network of Authorized Dealers. Look in the yellow pages of the phone book under "Welding Equipment" for the Airco office or Airco Authorized Dealer nearest you. If you do not already have the Airco Electrode Pocket Guide, shown above, we'll be happy to send you a copy on request.

**See Airco booth No. 401 at the AWS Welding Show
April 15-16-17, St. Louis, Mo.**



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Air Reduction Pacific Company is a division of Air Reduction Company, Incorporated. Principal products of other divisions include: PURECO — carbon dioxide — gaseous, liquid, solid ("DRY-ICE") • OHIO — medical gases and hospital equipment • NATIONAL CARBIDE — pipeline acetylene and calcium carbide • AIRCO — acetylenic chemicals • COLTON — polyvinyl-acetates, — alcohols, and other synthetic resins.

... for more details, circle No. 33 on Reader Service Postcard
WESTERN INDUSTRY — March 1958

Air conditioning equipment directory

-listing 150 sales outlets in the West

AMERICAN-STANDARD, American Blower Division, Detroit, Mich.

Air conditioning and refrigeration equipment, centrifugal and propeller fans.

Branches

Ariz., Phoenix—G. T. Moore, Mgr., 132 S. Central Ave., Central Madison Bldg.
Calif., Los Angeles—W. S. Badt, 816 W. Fifth St., 506 Architects Bldg.
Calif., Sacramento—R. F. Schmoker, 2115 "J" St., Security Bldg., Suite 3
Calif., San Francisco—T. J. White, 821 Market St.
Colo., Denver—C. S. Becker, 1304 Cherokee St. Mont., Billings—L. D. Niblack, Rm. 209, M & R Bldg., 1002 Division St.
Ore., Portland—W. S. Cooper, 445 Pittock Block Bldg., 921 S.W. Washington St.
Utah, Salt Lake City—H. S. Folsom, 458 S. Third East
Wash., Seattle—R. D. Morse Co., 1305 Republican St. (Representative)

CARRIER CORP., Syracuse, N. Y.

Air handling and conditioning products and refrigeration equipment for treating air for any plant from a single room, laboratory or crane cab to an entire plant.

Branches

Calif., Los Angeles—John F. Kooistra, 5330 Harbor St. RAYmond 3-6511
Calif., San Francisco—Thomas Campion, 906 Tennessee St. VAlence 4-1587
Colo., Denver—Harvey Forrest, 1135 Bannock St. AMhurst 6-1693

Representatives
Ariz., Phoenix—Black & Ryan Air Conditioning Co., 630 W. Washington St.
Ariz., Tucson—Clark & Co., 315 N. Fourth St.
Calif., Los Angeles—Prentiss Corp., 631 S. Anderson St.
Calif., San Francisco—Ward, Edw. B. & Co., 110 Freelon St.
Colo., Denver—Air Engineering, Inc., 2635 8th Ave.
Mont., Billings—Big Horn Plumbing & Heating, Inc., 115 N. 27th St.
Neb., Omaha—Air Conditioning Equipment Co., 417 S. 10th St.
Nev., Las Vegas—Western Distributors, Inc., 710 S. Main St.
N. Mex., Albuquerque—Air Conditioning Equipment Co., 1613 Second St., N.W.
Utah, Salt Lake City—Equipo Division, Larsen & Co., 89 E. 7th South
Wash., Spokane—General Equipment Co., 501 Hyde Bldg.

CLARAGE FAN CO., Kalamazoo, Mich.

Centrifugal fans, air conditioning units, air washers, power roof ventilators, unit heaters, mechanical draft equipment.

Representatives

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Calif., San Francisco—Vanderhoof Equipment Co. of Northern California, 444 Market St. EXbrook 2-3408
Colo., Denver—Mountain States Machinery Co., 1526 Blake St. CHerry 4-7421
Mont., Billings—L. W. Worthington, 2116 3rd Ave., N. Phone 2-4154
N. Mex., Albuquerque—Sebest Equipment Co., P. O. Box 6115, Phone 4-1492
Ore., Portland—H. W. McKenzie Co., 100 N.E. Holladay St. BELmont 4-4305
Utah, Salt Lake City—Henry S. Parks, 1431 E. 21st St. South INgersoll 6-6549
Wash., Seattle—Preferred Equipment Engineers, 2615 Fifth Ave. MA 3964

COLT VENTILATION OF AMERICA, INC., 4652 Hollywood Blvd., Los Angeles 27, Calif. NORmandy 1-0261

Ventilation equipment of all kinds.

Representatives

Calif., El Monte—Niel M. Dahl, 2436 N. Chico Ave. FOrest 0-0808

Calif., San Francisco—Wyatt R. Brown Co., 734 Harrison St. YUKon 2-2171

Utah, Salt Lake City—Henry S. Parks, 1431 E. 21st St. South INgersoll 6-6549
Wash., Seattle—Mason Emanuel, 908A Elliott Ave. West. ALder 4600

Ore., Portland—Refrigerative Supply, Inc., 619 S.E. Sixth Ave. FILmore 4-4335
Utah, Salt Lake City—Refrigeration Distributors Corp., 234 W. 13th St. S. HUNter 4-6122

HARTZELL PROPELLER FAN CO., Piqua, Ohio

Fans and blowers and roof ventilators.

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Calif., Santa Clara—Florence & Co., P. O. Box 144, CHerry 3-8217
Calif., Torrance—G. W. Leseman & Co., 2325 Torrance Blvd. FAirfax 8-2804
Colo., Denver—Don Bachman Co., 1201 E. Colfax Ave. KEystone 4-6915
N. Mex., Albuquerque—Alpine Steel Products Corp., 3414 Constitution N.E. Phone 8-1524
Utah, Salt Lake City—Frontier Engineering Services, 81 E. 7th St. ENterprise 4-1186
Wash., Seattle—Standard Equip Sales, 204 W. Lucile St. MOhawk 9440

ILG ELECTRIC VENTILATING CO., 2850 N. Pulaski Rd., Chicago, Ill.

Power roof ventilators and ventilating equipment parts.

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Colo., Denver—H. F. Ream, 1028 Champa St. Mont., Billings—W. A. Lafler, 108 N. 23rd St.
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Utah, Salt Lake City—Jerry Wilcox, 2280 S. 18th St. East
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Wash., Spokane—Eugene Johnson, 802 E. Pacific Ave. KEystone 5-5391

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Air conditioners, cooling coils, condensing units and condensers, furnaces.

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Calif., Oakland—Frigidaire Sales Corp., 1250 53rd St. OLympe 2-9700
Colo., Denver—Frigidaire Sales Corp., 215 Waze Market, TABor 5-0121
Ore., Portland—Frigidaire Sales Corp., 1035 N.W. 14th Ave. CA 2-1851
Utah, Salt Lake City—W. H. Bintz Co., 433 W. Third St. South EMpire 3-5821
Washington, Spokane—Spokane Electric Co., 703 Division St. FAirfax 5-4565

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Packaged air conditioners.

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Wash., Seattle—General Electric Co. Air Conditioning Division, 705 Second Ave. SEneca 8300

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Calif., Fresno—Valley Air Conditioning Supply Co., 1104 Parallel Ave. FReno 4-2881
Calif., Oakland—General Air Conditioning & Heating Co., 2001 Peralta St. TWInoaks 3-0466
Colo., Denver—Refrigeration Distributors Corp. of Colorado, 500 Kalamath St.
Montana, Billings—Empire Heating & Cooling Co., Inc., P. O. Box 1516 N.P., Industrial Site, Albert St. Billings 3-3189
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Air conditioners, drying equipment, fan heaters, spray cooler, condenser, liquid cooler, dual cooler, aero heat exchanger, aero after cooler, steam condenser, motor blower units.

Branches

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Graphic panels for air conditioning systems.

Branches

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Industrial air systems for heating, ventilating, product drying, curing, heat treating.

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Centrifugal refrigeration, reciprocating compressors, evaporative condensers, cold generator, self-contained air conditioners, multi-room air conditioners, unit air conditioners, fluid coolers, transportation equipment.

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 Fans, heating and cooling coils, air distributing units, dehumidifiers, electronic air cleaners.
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 Utah, Salt Lake City—Williams, Gritton & Wilde, 204 Dooly Building. EMpire 4-6421

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Packaged air conditioners, room air conditioners, year-round home air conditioners, air handling units, unit heaters and ventilators, commercial product coolers.

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 Calif., San Francisco—Worthington Corp., 224 Townsend St.
 Colo., Denver—Worthington Corp., 1640 Blake St.
 Ore., Portland—Worthington Corp., 1815 S.E. 7th Ave.
 Utah, Salt Lake City—Worthington Corp., 118 Social Hall Ave.
 Wash., Seattle—Worthington Corp., 2616 Western Ave.

YORK CORP., York, Pa.

Air conditioning and refrigeration equipment.
Branches
 Calif., Los Angeles—York Corp., 5051 Santa Fe Ave. LUdlow 8-9231
 Calif., San Francisco—York Corp., 1275 Folsom

St. UNderhill 1-1248
 Colo., Denver—York Corp., 1154 Bannock St. Tabor 5-6188
 Wash., Seattle—York Corp., 1202 Harrison St. SEneca 6969

Representatives

Ariz., Phoenix—Arizona York Refg. Co., Inc., 4115 N. 7th Ave.
 Ariz., Phoenix—Karlson Machine Works, 695 E. Grant St.
 Ariz., Tucson—Southern Ariz. York Contr. Co., 4471 E. Speedway
 Ariz., Yuma—Culver Refg. Sales & Service, 1460 Third Ave.
 Calif., Bakersfield—William M. McKenney, 2323 R St.
 Calif., Chico—York Chico Co., 1345 Park Ave.
 Calif., El Centro—York Imperial Co., 1461 Main St.
 Calif., Los Angeles—Commercial Refg. Co., Inc., 1700 N. Soto St.
 Calif., Los Angeles—Jennings Refg. Co., 2933 E. 11th St.
 Calif., San Francisco—Phillips Refg. Products Inc., 444 Potrero Ave.
 Calif., San Francisco—Scatena York Co., 1666 Mission St.
 Calif., San Leandro—Aladdin Heating Corp., 1111 137th Ave.
 Nev., Las Vegas—Desert York, Inc., P. O. Box 1568, 304 Wall St.
 Ore., Portland—Monroe Food Machinery Inc., 1800 S.W. Harbor Dr.
 Wash., Seattle—Refrigeration Eng. Co., 1718 Broadway
 Wash., Yakima—Central Heating & Plumbing Co., 510 S. First St.

25 best manuals on air conditioning

—yours for the asking. Use postcard, page 67

New Worthington line

Seven pages of illustrations, design features, and specifications tell the story on Worthington's newly designed Central Station Cabinet Type air conditioning units. Available in both horizontal and vertical units, the conditioner comes in 10 different sizes, ranging up to 106 tons capacity. The manual is indexed and easy to follow. *Worthington Corp.* . . . for your copy, circle, No. 100

Trane your room to coolness

To help you select the exact air conditioner for your needs from the Trane line is the purpose of Trane's 16-page bulletin on their packaged conditioners. Choosing is made easy by pages and pages of tables on cooling and heat capacities, fan performance, roughing-in dimensions, and mechanical specifications. Illustrations of 3 to 20-ton capacity models. *The Trane Co.* . . . for your copy, circle, No. 101

Ross is everywhere

Uses for industrial air systems are endless. Typical of operations in which J. O. Ross air systems are used are manufacturing of laminated products, fibre board, paper, plastics, textiles, foods, abrasives, to mention just a few. In an 8-page bulletin, Ross shows their equipment at work drying textiles and TV tubes, baking automobile paint, processing plastic. Industrial ovens, dryers, air heating systems, and paint finishing systems are illustrated and detailed. *J. O. Ross Engineering Corp.* . . . for your copy, circle, No. 102

Chilled water for your air conditioning

This single-stage hermetic centrifugal refrigerating machine automatically maintains chilled-water temperature . . . regardless of load. And its new features bring a record high in performance and economy. How the Tonrac does this—and what it can do for your air conditioning system is detailed in this well-illustrated eight-page manual. The center spread contains a pictorial breakdown of this unit, showing its simplicity of design. The few moving parts assure low maintenance, quiet operation, dependable service. *American Blower Corporation, Division of American Standard.* . . . for your copy, circle, No. 103

"Better by Farr"

Clean air, minus dust, grime, grease, is the real subject of Farr's book-size compilation of bulletins on commercial and industrial air filtration equipment. Indexed by tabs for convenient reference, the publication covers air filters, self-washing filters, grease filters, frames and clips, servicing equipment, and rotary coolers. This . . . for your copy, circle, No. 104

tome is full of illustrations and diagrams, sprinkled with useful capacity tables, construction detail and specifications. *Farr Co.* . . . for your copy, circle, No. 105

What's your problem?

Are you short on floor space for an air conditioning unit? Or have you no floor space at all? Frigidaire has the answer—and so can you merely by requesting their 6-page fold-out dedicated to tailoring air conditioning to individual needs. Illustrations and specifications on the company's Mastermatic, Multi-matic, remote conditioners and component units. *Frigidaire.* . . . for your copy, circle, No. 106

Air conditioning in technicolor

Air conditioning can be a colorful subject. If you don't believe it, have a look at Powers' 4-page booklet describing their Graph-o-matic panels. A color-coded representation of the air conditioning system, these panels provide for the central location of control components, stop-start buttons and indicating lights—all in shades of green, blue, red, black, and white. Constructed of $\frac{1}{8}$ -in. thick rolled steel panel, they're strong as well as attractive. Publication includes color illustrations of panels for heating systems, refrigeration systems, fan systems, and building symbol. Included is a typical specification for a Graph-o-matic panel. *The Powers Regulator Co.* . . . for your copy, circle, No. 107

A century of experience

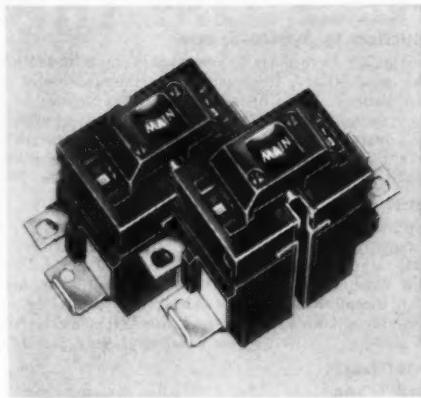
For over 100 years Curtis has been busy accumulating the experience that goes into the manufacture of the products presented in this 4-page specification leaflet. Detailed under packaged air conditioners are the company's air and water cooled models. Also covered are packaged liquid chillers, room air conditioning units for use with liquid chillers, condensing units, cooling towers, and evaporative condensers. "Air Conditioning and Your Health," an eight-page booklet describing the beneficial effects of air conditioning on heart disease, allergies, and insomnia, is also available. *Curtis Manufacturing Co.* . . . for your copy, circle, No. 108

Make air your servant

A front-page index makes it easy to find what you're looking for in Clarage's 8-page catalogue on "dependable equipment for making air your servant." Every piece of equipment is illustrated and applications and design are outlined. Charts and diagrams round out the picture. Included in the descriptive material are the Multitherm air conditioning units for both comfort and process applications in industry. *Clarge Fan Co.* . . . for your copy, circle, No. 109



Pushmatic*—magic button to circuit safety!



BULLDOG DUO-GUARD PUSHMATICS are available in single-pole or 2-pole common-trip . . . come in 15, 20, 30, 40, or 50-ampere ratings. 70- or 100-amp 2-pole common-trip Pushmatics are available as factory installed units.

*Circuit breaker trademark registered by BullDog Electric Products Co.

Magic button to efficiency and economy, too! Available in 15- to 50-ampere ratings, Duo-Guard® Pushmatic breakers fit any BullDog Electri-Center® panel . . . safeguard branch circuits two ways. Thermal-bimetal action protects against normal overloads. Magnetic action protects against high overloads and short circuits. When a circuit is open, just a push of the breaker restores service.

Compact Electri-Centers supply needs from 4 to 42 circuits . . . meet most industrial, commercial and institutional requirements. They use minimum space, are easy to install, provide space to add future circuits. Check your electrical contractor or BullDog field engineer for complete details, or write BullDog Electric Products Co., Detroit 32, Mich.

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BULLDOG 

BullDog Electric Products Co., Detroit 32, Mich. A Division of I-T-E Circuit Breaker Co.
BullDog Export Division: 13 East 40th St., New York 16, N.Y.

In Canada: BullDog Electric Products Co. (Canada) Ltd., 80 Clayson Rd., Toronto 15, Ont.

... for more details, circle No. 34 on Reader Service Postcard

Packaged conditioners

Curtis packaged air conditioning units, the industrial and commercial air conditioning installation which combines into a single space-saving package, are the subject of a 4-page descriptive folder which gives specifications, engineering data and optional equipment. *Curtis Manufacturing Co.*

. . . for your copy, circle, No. 110

American Blower data

Twenty pages of diagrams and charts tell American Blower's story on their central station and cabinet type air conditioning units. Detailed are the Model A, designed for summer cooling and dehumidifying; Model S, which combines the washing, air cleaning, humidifying, and evaporative cooling of an air washer with the cooling and heating of the basic unit conditioner, and AB, a multi-zone conditioner. Space-saving arrangements are diagrammed for A and S. Information on the models includes fan capacities, cooling coil ratings, physical data. *American Blower Division of American-Standard*. . . . for your copy, circle, No. 111

Why the air method in refrigeration?

. . . is answered in Niagara's 12-page booklet on their No-Frost method in food industries. A host of other "Whys" are answered and diagrams, charts, and photographs fill in the story. How the No-Frost method helps your plant produce more, how it saves time, labor and trouble in operation, and the savings in installation costs, are all covered. *Niagara Blower Co.*

. . . for your copy, circle, No. 112

Air for industry

Applications of the Niagara Type "A" air conditioner are listed in a 4-page booklet put out by that company. Numerous photographs show the conditioner at work in a bakery fermentation room, textile mills, and laboratories, to list only a few of the industries which depend on uniform atmosphere to insure the quality of their material. A two-color diagram is included. *Niagara Blower Co.*

. . . for your copy, circle, No. 113

Useful Carrier fold-out

An illustrated break-down of Carrier Weathermakers is the subject of a 6-page fold-out. Dimensions and weights, typical arrangements of components and capacity ratings are all part of this useful bulletin. Weathermakers are a fan-coil type conditioner for application to central cooling and heating systems using remote sources of refrigeration and heat. *Carrier Corp.*

. . . for your copy, circle, No. 114

Facts, facts, facts

It's difficult to imagine any information on the Clarge Multi-therm Conditioning Units that's not in this fact-packed 32-pager. The unit comes in horizontal and vertical types and is used for cooling, heating, cleaning, humidifying and dehumidifying of air. Punched for notebook insertion, this volume offers tables on fan speed and horsepower, water coil capacities, how to determine leaving dry bulb temperature, to mention only a few. Included also are labeled line drawings, construction details, and a list of Clarge service offices for your convenience. *Clarge Fan Co.*

. . . for your copy, circle, No. 115

A look at Niagara

Niagara's air engineering equipment is explained in a 4-page brochure which includes pictures of each model accompanied by brief descriptive paragraphs. Coolers, drying equipment, and fan heaters are among the products mentioned. Also detailed is the No-Frost method for refrigerating space or products. *Niagara Blower Co.*

. . . for your copy, circle, No. 116

Chilled water for automatic air conditioning

CenTraVac, a centrifugal water chiller for air conditioning and process systems, is thoroughly explored in 62 pages of photographs, schematic drawings, cutaway illustrations, tables and specifications. Typical applications of the CenTraVac include: air conditioning of new and existing buildings, factory air conditioning, heat pump installations, chilling water or other liquids for industrial process, and electronic applications. *The Trane Co.*

. . . for your copy, circle, No. 117

York publication a thing of beauty

York can be proud of their handsomely bound, 32-page spiral booklet. Prepared in limited edition and illustrated with noteworthy original artwork and photographs, the publication outlines the company's history in the air conditioning field, takes you into their West York plant where the Yorkaire systems are produced, from there to installations in Miami Beach, New York, and out to sea on the U. S. S. United States. The system itself is detailed in text and diagrams. For your convenience, a list of direct sales and service offices is included. *York Corp.*

. . . for your copy, circle, No. 118

For cool, clean air everywhere

Induction Unitrane room air conditioning for multi-room, multi-story building air conditioning is featured in Trane Company's 15-page, 2-color booklet. Diagrams of the system's tandem jets, filters, reversible coils; roughing-in dimensions; architectural suggestions, and specifications are part of this useful booklet. *The Trane Co.*

. . . for your copy, circle, No. 119

Keeping cool with Frigidaire

Frigidaire, long a well-known name in air conditioning, has made available a 19-page, 3-color booklet, containing valuable information on their summer-winter air conditioners. Detailed diagrams and specifications are given for store type and remote type air conditioners, cooling coils, condensing units and condensers, room conditioners, and furnaces. An illustrated table of contents makes finding what you want easy. *Frigidaire*.

. . . for your copy, circle, No. 120

Your library on ventilation and fire control

These three manuals will give you a valuable technical library on ventilation and fire control. Included are: "A Lecture on Fire Control in Industry," by M. J. Reaney (circle No. 121); Technical manual giving full details of the Colt System and equipment used (circle No. 122); "The Application of the Principle of Heat and Smoke Exhaust in Industrial Buildings in Great Britain," by M. J. Reaney (circle No. 123). *Colt Ventilation of America, Inc.*

90 best manuals on electric motors and controls

Dear Joe:

WELL, WE'RE all wound up in electric motors this month. Ya know there are more than 90—that's right, NINETY—books here . . . and they're all just so you can keep up with what's hot in the motor and control field.

Ya know, I've been looking these motor books over, and I've spied some trends: like everybody wants more completely enclosed motor housings and they're pushing for new insulating materials. They're demanding better bearings, too. So there're lots of books on these items.

When it comes to controls, automation rears its head. What's new is news here: complete lines of control products just for automation applications, or new individual specialties like the latch relay. So get buzzin', cousin, and read over these writeups. Then circle numbers on the postcard on page 67 for the manuals you want. They're free!

Your buddy,

Will

8-page introduction to Syncro-Spede

An informative leaflet introduces a new synchronous induction motor built in the same NEMA frame size as a standard motor of equal 1 to 100-hp. ratings. The illustrated booklet recommends it for high frequency drives, precise timing, metering and recording devices, high speed operations and adjustable frequency multi-motor systems. Graphs and illustrations demonstrate design principles. *Louis Allis Co.*

. . . for your copy, circle, No. 240

152-page digest of control equipment

This handy book digests a complete line of motor control and distribution equipment including everything from a-c starters to wireways. It charts most information for quick reference and illustrates much of the equipment. If you need a circu' breaker, machine tool control, dimmerboard, limit switch, overload relay or any of 101 other products, take a look through this listing. *Square D Co.*

. . . for your copy, circle, No. 242

Parade of motor parts

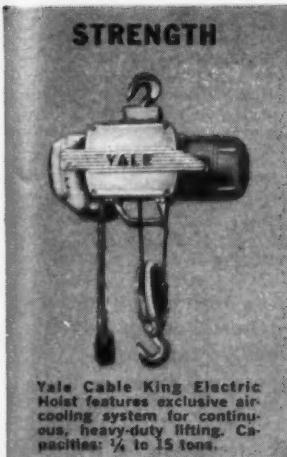
A pre-lubricated bearing assembly, insulation system, die-cast rotor, armorized housing and enclosure make up the chapters of this 24-page book with its focus on the design necessary for a good motor. Lots of pictures, many in color, help tell the story. *Westinghouse Electric Corp.*

. . . for your copy, circle, No. 241

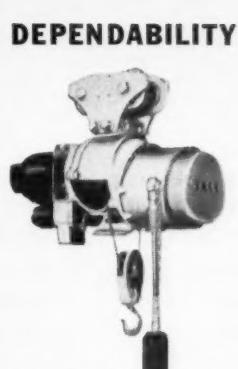
Step control of synchronous motors

Typical motor control problems and their solutions comprise this eight pager on controls for synchronous motors. It explains motor operation clearly, then shows step-by-step control in all phases of operation. A very handy book. *General Electric Co.*

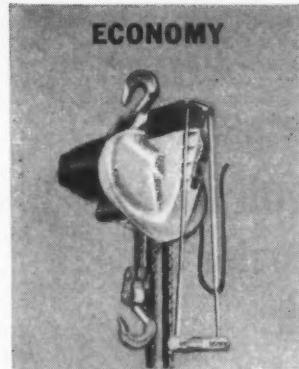
. . . for your copy, circle, No. 243



STRENGTH
Yale Cable King Electric Hoist features exclusive air-cooling system for continuous, heavy-duty lifting. Capacities: $\frac{1}{2}$ to 15 tons.



DEPENDABILITY
Yale Load King Electric Hoist: two-brake safety and quick pushbutton response. Cap: Wire Rope Model— $\frac{1}{4}$ to 1 ton; Link Chain type— $\frac{1}{4}$ to 1½ tons.



ECONOMY
Yale Midget King Electric Hoist works for less than two cents a day. Compact design. Lightweight. Capacities: $\frac{1}{2}$ to 2 tons.



SAFETY
Yale Load King Hand Hoist with Synchronomatic Load Brake gives instant braking action. High mechanical efficiency. Cap: $\frac{1}{2}$ to 12 tons.

DURABILITY



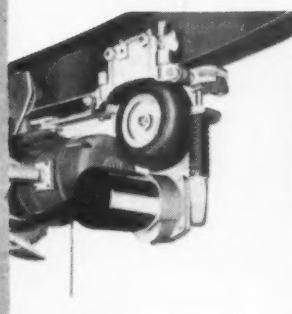
YALE
Yale Spur-Geared Chain Hoist is made of the highest quality steel for long service, constant safety. Capacities: $\frac{1}{4}$ to 40 tons.

VERSATILITY



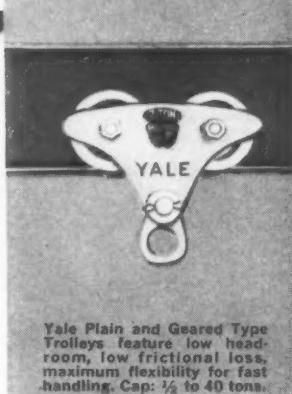
YALE
Yale Pul-Lift lifts and pulls from any angle. Portable. Capacities: roller chain model— $\frac{1}{4}$ to 15 tons; link chain model— $\frac{1}{4}$ to 3 tons.

SPEED



YALE
Yale Rail King Tractor Trolley is motor-driven. Pulls any type of equipment for fast overhead handling. Capacities: $\frac{1}{2}$ to 3 tons.

EFFICIENCY



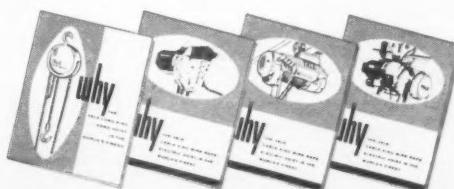
YALE
Yale Plain and Geared Type Trolleys feature low headroom, low frictional loss, maximum flexibility for fast handling. Cap: $\frac{1}{2}$ to 40 tons.

8 SOLID REASONS WHY YALE CAN MEET YOUR LIFTING NEEDS

Will a single hoist do your job? Or do you need an integrated team? What jobs get done best with a hand hoist? Which require an electric? Is yours a trolley or stationary operation? Your Yale Hoist Distributor has the right answers.

More! You need never buy "blind". Yale's series of "Why" booklets show you the vitals of each Yale Hoist—through accurate cutaway drawings that take you inside the product. These booklets are yours for the asking. Just contact your Yale Hoist Distributor—listed in the yellow pages, or write The Yale & Towne Manufacturing Co., Phila., Pa., Dept. A-263.

Better still, he has the right *equipment*—a complete line of rugged, smooth-operating Yale Hoists and Trolleys. Each is engineered to provide yeoman service under tough conditions year after year.



YALE*
*REG. U.S. PAT. OFF.

YALE & TOWNE

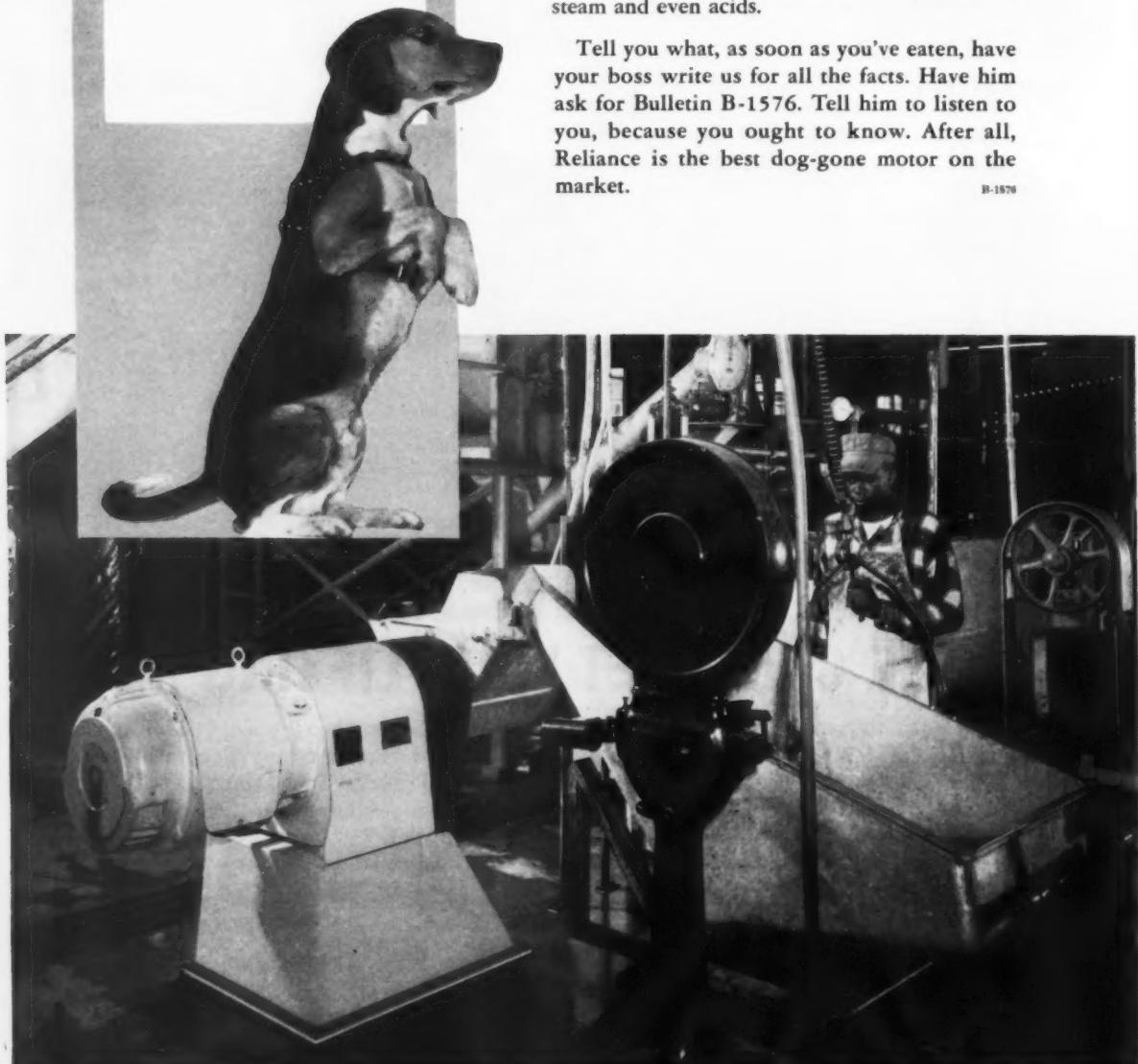
INDUSTRIAL LIFT TRUCKS AND HOISTS

GASOLINE, ELECTRIC, DIESEL & LP-GAS INDUSTRIAL LIFT TRUCKS • WORKSAVERS
WAREHOUSERS • HAND TRUCKS • HAND AND ELECTRIC HOISTS

YALE MATERIALS HANDLING DIVISION. THE YALE & TOWNE MANUFACTURING CO. MANUFACTURING PLANTS: PHILADELPHIA, PA.; SAN LEANDRO, CALIF.; FORREST CITY, ARK.

... for more details, circle No. 35 on Reader Service Postcard

You won't go
hungry with a --->
Reliance motor
on the job



KEEP begging, boy, your dog food's on the way . . . 18,000 pounds an hour from The Begmore Pet Food Company, Portland, Oregon.

Reliance is doing its job to help. A big 40 hp. Reliance Motor is turning that meat auto grinder. It's kept clean by a steam hose, but that doesn't bother a Reliance Totally-Protected Motor. Double-dipped windings shrug off water, steam and even acids.

Tell you what, as soon as you've eaten, have your boss write us for all the facts. Have him ask for Bulletin B-1576. Tell him to listen to you, because you ought to know. After all, Reliance is the best dog-gone motor on the market.

B-1576



RELIANCE ELECTRIC AND
ENGINEERING CO.

DEPT. 323A, 1525 ADRIAN RD., BURLINGAME, CALIFORNIA
Main Plant: Cleveland 17, Ohio • Canadian Division: Toronto, Ontario

... for more details, circle No. 36 on Reader Service Postcard
WESTERN INDUSTRY — March 1958

A-c. motors for stepless speed control

Proving itself in Europe even before World War II, this variable speed a-c. motor for driving machine tools, machinery, elevators, conveyors, pumps and a thousand other things, is now being introduced to American industry. This eight-page brochure does the job with many power flow diagrams showing the motor at various speeds, precise text and specifications. *Bogue Electric Mfg. Co.*

... for your copy, circle, No. 244

Condensed data on drives, reducers

Frame sizes and prices, modifications and accessories, dimensions and selection tables—this is what you'll find in a 20-page condensed catalog on a-c. squirrel cage motors, gearmotors, speed reducers and variable speed drives. Briefly illustrated. *Sterling Electric Motors, Inc.*

... for your copy, circle, No. 245

Timer for nonsynchronous welding

"How would you improve upon present-day resistance welding control?" asks this eight-page leaflet. Then it offers the Weld-O-Timer as an answer and tells you why—simplified circuit design and construction, operating ease and improved thermal protection for the ignitron tubes, for instance. Illustrated. *Westinghouse Electric Corp.*

... for your copy, circle, No. 246

64 pages on controls and timers

You name it and it's in one of the four sections on this 64-page book. Do you need a contractor—double throw, remote control switch, solenoid or clapper type? Or a special control—sequence alternator, push button station, ground detector relay, multiple relay, laundry reversing control? Or perhaps an electrically operated, mechanically or electrically-held automatic transfer switch? In timing devices consider program, interval, indexing interval, elapsed time, or percentage timers. *Zenith Electric Co.*

... for your copy, circle, No. 247

How to order special motors

Complete information on torque and special design motors precedes an order form on data required for high torque motor applications. Pictures of eight special motors show some of their design features. *B. A. Wesche Electric Co.*

... for your copy, circle, No. 248

Selection tables for gearmotors

Selection tables for parallel shaft gearmotors with 1 through 125 hp. comprise this six pager. It probes special design features briefly in text and illustrations. *Howell Electric Motors Co.*

... for your copy, circle, No. 249

All about generating equipment

Three sheets elaborate on generating equipment. The first, a four-page leaflet on a-c. generators, motor generators and d-c. to a-c. converters, pictures and illustrates several models. A six-pager does the same for motor generator sets while a single sheet pinpoints a-c. generators up to 500 kva. with either belted or direct connected excitation. *Kato Engineering Co.* ... for your copy, circle, No. 250

... for your copy, circle, No. 251

Applications for synduction motor

Constant speed, adjustable speed and miscellaneous applications for a motor combining synchronous speed with induction simplicity are explored in a four-page brochure. It displays the synduction motor in color and mentions specifications. *Allis-Chalmers Mfg. Co.*

... for your copy, circle, No. 252

Totally-enclosed, fan-cooled motors

How the double-shell TEFC motors give maximum protection on toughest applications is detailed in this well-illustrated (in color) four-page booklet. Superior construction features are described, including: cast-iron outer shell, air passages between inner and outer frame, rugged inner shell, external fan, cast-iron bearing housings, easy-access conduit box, rotating labyrinth shaft seal, and cast-iron end shields. Color diagrams point out how the bearing system extends motor life. *General Electric Co.*

... for your copy, circle, No. 252

Motors have "made their way by way they're made"

Color abounds in this eight-page presentation of these motors, "life-lengthened by quality." Colored diagrams point out advanced features (asbestos-protected, lubricated bearings, normalized castings) of the complete line of motors—including unenclosed, totally-enclosed and explosion-proof, vari-drive and syncogear, combination, verticlosed, vertical unimount—and other motors that round out this line. *U. S. Electrical Motors, Inc.*

... for your copy, circle, No. 253

Selecting 1/2 to 30-horsepower motors

Here's an excellent guide to selecting and using 1/2 to 30-hp. d-c. motors, both single phase and polyphase. Included in this eight-page booklet are these sections: "Selecting the Best Motor," "Standards and Specifications," "Fractional and Integral Horsepower Motors," "Enclosures," "Mountings and Modifications," "Fractional and Integral Horsepower Frame Sizes." *The Peerless Electric Co.*

... for your copy, circle, No. 254

Doubly protected motors for indoors or out

The rugged corrosion-resistant, cast-iron construction and drip-proof-plus enclosure of this motor are outlined in this four-page brochure. "Exploded" pictures detail every part of the motors, and advantages are pointed out. Sixteen reasons are given why this is a good buy. A chart on the back lists frame sizes and dimensions. *Wagner Electric Corp.*

... for your copy, circle, No. 255

"ED for Extra Dependability"

Twenty pages picture and relate the "extra dependability" of applications. Featured are H-type a-c. motors, T-type a-c. motors. Selectrol variable speed drive, Selectron variable speed drive, Gear-ED-motors, d-c. equipment, modified design motors, installations, and experienced service facilities. Of special interest are the Selectron ($\frac{3}{4}$ hp.) variable speed drive and Selectrol (5-125 hp.) ... also rated frame motors 1-30 hp. and explosion proof motors 1-150 hp. *Electro Dynamic Division of General Dynamics Corp.*

... for your copy, circle, No. 256

300/3000 watts a-c. and d-c. generators

"Generators and motor generator sets to fit your power need . . . when, where and how you want it!" That's the theme of this eight-page manual. And the description of how Leland builds a generator is practically a "do it yourself" guide book. The rest of the manual contains ratings and approximate dimensions for the power you need in the types, sizes and mountings you want. *The Leland Electric Co., Division of American Machine and Foundry Co.*

... for your copy, circle, No. 257

A-c. shaded pole induction motors

If you want to know how both these reduced and unreduced motors perform, this four pager is for you. Devoted primarily to performance characteristics in chart form, it lists design features and illustrates briefly. *SpeedWay Mfg. Co.*

... for your copy, circle, No. 258

Motors for you to adapt

If you need a special motor with special characteristics, check this eight-page leaflet on motors with varying electrical and mechanical characteristics adaptable to today's unique machines. All types are illustrated and paired with their special features. *Reuland Electric Co.*

... for your copy, circle, No. 259

Loose-leaf folder on timing equipment

If the time has come for you to check over your electric timing motors, devices and clock movements, get this 30-page file folder on same and have a look at hysteresis, inductor, clutch, d-c., miniature or heavy-duty motors; time delay, interval and cycle timers; and elapsed time indicators or rectangular and round electric clock movements. Illustrations and specifications. *Haydon Div., General Time Corp.*

... for your copy, circle, No. 260

Plus features of enclosed motor

Here, in a four-page brochure, are the plus features, in color, of a new totally-enclosed small and light motor. It's coupled with a second four pager on a simplified adjustable motor speed system, its advantages, ratings for operation and dimension charts. *Baldor Electric Co.*

... for your copy, circle, No. 261

Coordinated starters for low-voltage units

A complete line of coordinated starters for squirrel-cage, wound-rotor and synchronous motors will be found in this brochure. Along with pictures, you'll find facts on voltage, short-circuit protection, maintenance and accessories. *General Electric Co.*

... for your copy, circle, No. 262

Integral units with old or new frame

There's no need to change your product design to use the new NEMA frame sizes. These integral horsepower motors are offered with optional frame mountings drilled to either the old or new specifications. Read about them in a colorful brochure on single phase, polyphase and drip-proof types. *A. O. Smith Corp.*

... for your copy, circle, No. 263

How the chemical motor resists corrosion

Pictures of insulation, fan, slinger and motor leads indicate how this chemical motor is built to resist corrosion. A four-page file folder also shows the induction motor in cutaway with other design features explored. *Crocker-Wheeler Div., Elliott Co.*

... for your copy, circle, No. 264

A relay to remember

This new mechanically-held, latched-in relay will remember a sequence, set-up or specific instructions independent of power or circuit failure. Read about it in a four-page introductory leaflet noting features, combinations with other relays and dimensions. *Clark Controller Co.*

... for your copy, circle, No. 265

Instruction guide to refrigeration duty motors

All the details you'd need to know about refrigeration duty motors are listed in this six-page guide book. Complete descriptions picture both single phase and polyphase motors. Charts list all facts on frame sizes and wiring. Diagrams show connections for single-phase motors. A unique feature of this booklet is a chart showing voltage supply furnished by major power companies in the various states. *The Peerless Electric Co.*

... for your copy, circle, No. 266

Complete round-up of electric motors and components

A glance at this manual, and you can pick out the motor you need for whatever application you have. Pictures, charts, tables, diagrams, etc. help you select any of these motors: fractional horsepower, integral single-phase, single phase and polyphase, integral horsepower, polyphase squirrel-cage, multi-speed squirrel-cage, wound rotor polyphase, part-winding start, vertical and flange mounted . . . and many others. In addition, components are described and all facts set down for dry-type transformers. *Wagner Electric Corp.*

... for your copy, circle, No. 267

3-step increment motor and starter combination

When unusually low current must be drawn from the line at start, this booklet tells you the best set-up you can have. All parts of this combination are pictured and described. Tables show you amperes drawn from line at 208 and 220 volts by motor. Other essential information is included. *Wagner Electric Corp.*

... for your copy, circle, No. 268

Cutaway of hollow shaft motor

A cutaway photograph in this leaflet spotlights the dozen special design features of this turbine pump driver. Dimensions and specifications follow in chart form. *A. O. Smith Corp.*

... for your copy, circle, No. 269

General motor selection guide

A representative of most every type of electric motor comprises this eight-page selection guide: vertical hollow shaft, integral or fractional horsepower, hermetic and gear. Cutaways and specifications will help you make a choice. *A. O. Smith Corp.*

... for your copy, circle, No. 270

Live modern . . . use an a-c. motor

What to look for in a modern a-c. motor is disclosed in this 10-page introduction to the new Type N integral horsepower induction motor. Enclosures, insulation, bearings—these are the things considered in detail. Illustrated. *Crocker-Wheeler Div., Elliott Co.*

... for your copy, circle, No. 271

Facts on the "Sealedpower" enclosure

The design features that make this motor enclosure suitable for use in hazardous locations are stressed in a file folder containing a cutaway. Frame, fan, shaft seal and bearings are pictured. *Crocker-Wheeler Div., Elliott Co.*

... for your copy, circle, No. 272

Motor geared to your speed

"The Speed You Want Where You Want It" displays a gearmotor in cutaway with red arrows leading to special features. Four single-reduction gearcase positions for horizontal operation plus ceiling, sidewall and inclined mountings, make a wide selection of integral power units. *Crocker-Wheeler Div., Elliott Co.*

... for your copy, circle, No. 273

D-c. motors for automation applications

D-c. and automation get together with these silicone insulated motors and generators. You can get together with both in a 20-page full-color book on how to choose the drive for your needs. Summarized are the advantages of silicone for insulation, ventilating systems, motor drive response, and performance specifications. *Westinghouse Electric Corp.*

... for your copy, circle, No. 274

Control systems and automation

This 16-page booklet answers questions about Cypak, an automatic electric control system for machine operations, steps and processes, and coordinated handling of materials. How does Cypak work? How do the elements process information? How can you use it? All these questions and many more are handled here. Well illustrated. *Westinghouse Electric Corp.*

... for your copy, circle, No. 275

Whys and wherefores of control centers

Control centers are popular because they make possible a compact and centralized control system. Here's a 28-page book telling you how you may be able to use one in your plant. It features many different types, explaining each in pictures and text, and shows a simple three-step method of planning a center. *Westinghouse Electric Corp.*

... for your copy, circle, No. 276

Mechanical features of outdoor motor

This leaflet spins out the mechanical features of this weather-protected NEMA Type II motor with the aid of a full page cutaway. Construction features come in for their share of the attention too. *Allis-Chalmers Mfg. Co.*

... for your copy, circle, No. 277

These motors are weather blind

Should it blow, rain, sleet or snow these motors couldn't care less. Weather protection for the chemical, water, petroleum, paper and mining fields shows up in their construction characteristics, displayed here in a cutaway diagram. Application pictures and a graph of motor ratings finish the six-page booklet. *Allis-Chalmers Mfg. Co.*

... for your copy, circle, No. 278

Controls for 2,300 to 5,000-v. motors

Design for accessibility, protection, performance and space economy is what this firm claims for its motor controls in this eight-page leaflet. It illustrates each of these features and many more with pictures and drawings. *Allis-Chalmers Mfg. Co.*

... for your copy, circle, No. 279

Drip-proof motors with form-wound construction

This four-page, colorful bulletin tells how these drip-proof motors provide extra protection against physical damage, electrical breakdown, and operating wear. The folder details the advantages of the motor's stator coils, horizontally split end shields, frames, rotor fans, bearings, double end ventilation. Also described is the new polyex insulation system which lengthens motor life up to 100%. *General Electric Co.*

... for your copy, circle, No. 280

How to use Select A-Spede

A 5 to 200-hp, adjustable speed drive goes through its paces in this 12-page brochure on applications, design features, dimensions, installation and performance data. One section displays optional features for special applications. *Louis Allis Co.*

... for your copy, circle, No. 281

Large motors for large jobs

Here are 16 pages on large induction motors for process machinery and industrial operations like refinery pumps, compressors, mixers, rock crushers or impact breakers. Cutaways show design and construction. *Louis Allis Co.*

... for your copy, circle, No. 282

Spec book on motors, transformers

Specifications comprise this booklet on electric motors, including fractional, integral, single-phase, polyphase and dry-type transformers. Indexed, it pictures each type and compiles mechanical, application and control data. *Wagner Electric Corp.*

... for your copy, circle, No. 283

Blue book of variable speed drives

This new line of mechanical variable speed drives provides infinitely variable speeds from 4,600 to 1.2 rpm. in speed variations of 2:1 to 10:1. Study the large photograph in this eight-page book to understand how these drives work and peek at the advantages of positive pulley control. A 30-page specification book is also included. *Sterling Electric Motors, Inc.*

... for your copy, circle, No. 284

Condensation of 1/6 to 300-hp. line

A six-page sheet condenses a full line of motors for general purposes, severe atmospheric conditions, hazardous locations, outdoor and sanitary use. Pictures and captions direct attention to rated and non-rated motors. Performance data is in chart form. *Howell Electric Motors Co.*

... for your copy, circle, No. 285

Quickie on improved drip-proof model

Four pages brief the Multiguard, a squirrel cage drip-proof motor of 1 to 40 hp. It notes design features such as welded frame and feet, one-piece end brackets, welded rotor, and dust protected bearings. Illustrations and specifications. *Lincoln Electric Co.*

... for your copy, circle, No. 286

Polyphase, drip-proof "Loadstar" motors

This four-page booklet tells how these "Loadstar" motors are: more power-packed . . . higher in efficiency . . . lighter in weight . . . smaller . . . better protected . . . quieter running . . . more efficiently cooled . . . more flexible . . . easier to install . . . modern in appearance . . . and maintenance-free! Pictures and diagrams illustrate above points. *The Leland Electric Co., Division of American Machine and Foundry Co.*

... for your copy, circle, No. 287

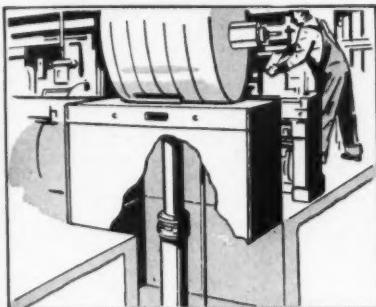
Condensed data on a-c. generators

Two sheets treat you to a brief look at the rotating field a-c. generator with ratings of 5 to 100 kw. Arrows lead to special design features on a cutaway of the unit. Complete with specs. *Kurz & Root Sales & Engineering Corp.*

... for your copy, circle, No. 288

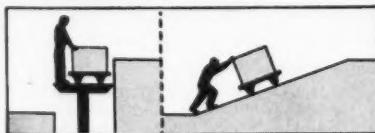
RAISE AND LOWER HEAVY LOADS AUTOMATICALLY TO SPEED AND IMPROVE PRODUCTION

LOAD AND UNLOAD MACHINES QUICKLY



Machines that are fed material in bulk quantities . . . or fabricate large and heavy end products . . . utilize hydraulic platform lifts to speed charging and discharging. Globe OILIFTS, used in these installations, reduce manual effort and portable machine handling, lower costs and speed the operation safely.

ELIMINATE HAZARDOUS RAMPS



Space consuming, dangerous and laboriously traveled ramps between two floor levels are eliminated by Globe OILIFTS. Materials move on the level, from one area to another, risk of damage or accident is lessened, space and time are saved.

GLOBE[®] OILIFT

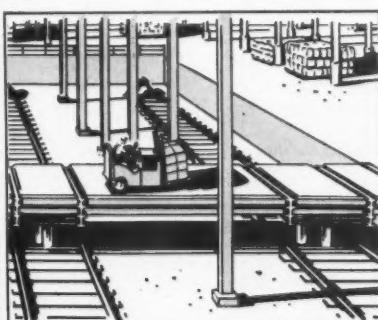
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BRIDGE LIFTS SPEED CROSS-TRAVEL

When railroad sidings cut a recessed path within a factory building or between two buildings, Globe Bridge Lifts can pay for themselves in time saved. They provide a short, direct path across the recess and eliminate the long haul around.

Time required to go around a siding is frequently from four to ten times as long as the crossing time. Taking into account men and equipment, it requires but little traffic to show a saving in favor of the bridge lift.

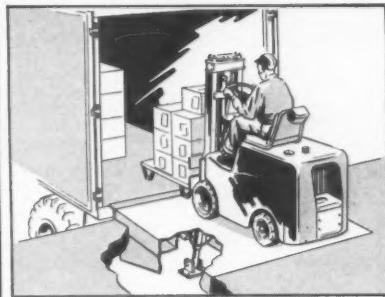


Globe Bridge Lifts meet most any requirement . . . to span 5 or 50 feet . . . for one- or two-lane passage, across single or multiple tracks. Assembled from standard power cylinders and structural components . . . thus these lifts are low in first cost, easy to install, and economical to use.



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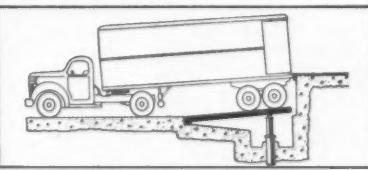
TRANS-O-MATIC RAMP SMOOTHS TRAFFIC



The gaps in distance or level between truck and loading dock are readily bridged by Trans-O-Matic Ramps. While the ramp is lifted out of the way, trucks back into position. The ramp is lowered to the truck body and "floats" to compensate for differences in level as loading or unloading proceeds.

Automatic Safety Lock prevents sudden drop if truck pulls away while ramp is being used.

TRUCK LEVELER EVENS OUT DOCK AND BODY HEIGHTS



By raising or lowering the rear of a truck or trailer, the bed is brought even with the dock.

Push button or lever control operates two hydraulic rams in unison. Size: 10 x 12 ft. Capacity: 40,000 lbs.

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TWENTY-FIVE COMPLETE SETS OF FLEXCO HD BELT FASTENERS NOW AVAILABLE IN ONE EASY-TO-HANDLE ECONOMY BULK PACKAGE



Standard shipping carton contains four "25-PAK" boxes of one size fastener. Keep a supply of "25-PAKS" on hand... easy to store and inventory. Sturdy boxes and shipping cartons have many uses!

Ask your FLEXCO distributor or write to us for additional information.

Flexible STEEL LACING COMPANY

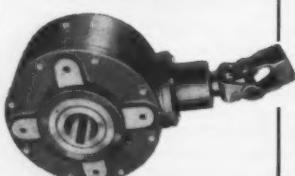
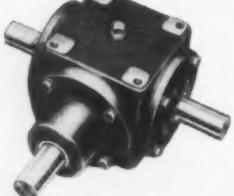
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HUB CITY

COMBINING QUALITY AND VERSATILITY

Stressproof Shafts
Timken Bearings



HUB CITY IRON CO. ABERDEEN, SD. DAKOTA

... for more details, circle No. 39 on Reader Service Postcard

UNIVERSAL ANGLE GEAR BOXES

MODEL 66

STANDARD DUTY

Universal for rotation and mounting. Available gear ratios 1:1, 1½:1, 2:1. Available shaft sizes, 1¼" round or splined or smaller, Timken bearings and ground Stressproof shafts.

MODEL 88

HEAVY DUTY

Universal for rotation and mounting. Available gear ratios 1:1, 1½:1, 2:1, 3:1. Available shaft sizes, 1¾" round or splined or smaller. Timken bearings and ground Stressproof shafts.

MODEL 99

EXTRA HEAVY DUTY

Helical ring gear type for extra heavy duty service. Choice of three ratios—40 to 6 tooth, 37 to 9 tooth, 34 to 7 tooth. Universal Joint supplied with choice of yokes in round, square or splined. Timken Bearings.

For complete information on these and other HUB CITY products ask your distributor, or contact Grether & Grether, Stockton, California, or factory.

Save money with packaged control

Everyone wants to save a dollar wherever he can. This eight-page brochure suggests packaged speed control as one way. Economic advantages of the adjustable voltage d-c. single or multi-motor controls are outlined, along with typical applications, equipment included in the package and possible modifications. Illustrated. Clark Controller Co.

... for your copy, circle, No. 289

A look inside a cam limit switch

This brochure with its cutaway photographs suggests a switch to the cam limit to solve your pressing problems or those of other machinery requiring dependable sequence operations of multiple circuits. This four page treats safety, flexibility, maintenance and specifications. Clark Controller Co.

... for your copy, circle, No. 290

Four handy leaflets on controls

These leaflets digest useful motor controls, such as the multi-speed and reversing motor starter, magnetic relay, and a new disconnect. A fourth sheet treats enclosures for magnetic motor starters. All list features and picture units. Arrow-Hart & Hegeman Electric Co.

... for your copy, circle, No. 291

"Catechism of Electrical Machinery"

If you want the basics, this 50-page book is for you. The first section is a simple discussion of electricity and magnetism as utilized in electric generators and motors. From there the book asks and answers questions on common types of a-c. and d-c. motors, generators and control equipment—questions that anyone not familiar with electrical terminology or phenomena would ask and answers they will understand. Fairbanks, Morse & Co.

... for your copy, circle, No. 292

Introduction to a guarded motor

The squirrel cage induction motor presented in this brochure is a new one so you'll be interested in reading about its frame, bearings, rotors and conduit boxes. Each is illustrated. Booklet concludes with a full-page chart of motor characteristics plus specifications. Fairbanks, Morse & Co.

... for your copy, circle, No. 293

Reversing motors for remote control

This brochure stresses the instant reversing action of this single-phase sleeve or ball bearing motor, the Inst-O-Verse. Designed as a remote control component, it can be used for garage doors, valves, chain hoists, ventilators, power tools or conveyors. See the application pictures in these four pages. Franklin Electric Co., Inc.

... for your copy, circle, No. 294

Facts about submersible motors

This book will whet your appetite for motors to use with deep well water systems. You'll be impressed with the winding protection, thrust, seals, and other features of this line, neatly arranged in chart form for quick check. Results of many tests are included with installation aids. A full color cutaway of the submersible motor concludes the 12-page book. Franklin Electric Co., Inc.

... for your copy, circle, No. 295

Facts on application engineered units

A motor engineered for your special application is what you may find in this brochure with its jet pump, Uniseal, Submatic, gear and self-lubricated units. Read all about each, check special design factors and make your selection. Franklin Electric Co., Inc.

... for your copy, circle, No. 296

"Automation through Varitrol control"

All the colors of the rainbow run through this eight-page report on how you can achieve automatic control—and improve product, save on labor, increase output and reduce waste—with Varitrol. The Varitrol is an automatic speed control component to the U. S. Varidrive motor. The brochure details how Varitrol is applied, typical applications, and a complete (well illustrated) explanation of how Varitrol works. U. S. Electrical Motors Inc.

... for your copy, circle, No. 297

Controlling speed of standard a-c. induction motors

This four-page booklet tells how U. S. Varidyne provides a simple means of controlling the speed of standard a-c. induction motors. Pictures and diagrams illustrate basic Varidyne applications. The multiple drive system provides simultaneous speed changes. Equal distribution of load is achieved automatically. U. S. Electrical Motors Inc.

... for your copy, circle, No. 298

Direct acting brakemotors

The climax of nearly two years of experimental work, and exhaustive tests under severe service conditions are reported in this four-page description of the Leland brakemotor. A huge cutaway diagram shows you the unique features. Specifications, load characteristics, applications, etc. round out the picture. Also available is a motor stock list, showing motors for immediate shipment. The Leland Electric Co., Div. of The American Machine & Foundry Co.

... for your copy, circle, No. 299

Heavy-duty motors for tough starting

This induction single-phase motor was designed for applications with unusually severe starting requirements. Find out why it's good for tough jobs in this four page leaflet along with comparison charts, a cutaway photograph of the motor and specifications. *Wagner Electric Corp.*

... for your copy, circle, No. 300

Construction features of fractionals

General construction features of fractional horsepower motors are compressed into a four-page leaflet along with dimensions in chart form and a cross section drawing. Illustrated. *Wagner Electric Corp.*

... for your copy, circle, No. 301

4 briefs on motors, brakes

Three single-page leaflets will brief you on an electric motor with integral fluid drive, and spline-coupled hydraulic pump mount motors. On the fourth leaflet you can check the advantages of the magnetic brake, according to the manufacturer the only disc type brake that can be supplied in the foot-mounted design. *Reuland Electric Co.*

... for your copy, circle, No. 302

16-page book on Cabinetrol system

Cabinetrol is a standard low-voltage control system which can be custom-engineered for any job and handles all motor types up to 600 hp. from a central location. Learn the advantages of the unit in this 16 pager and use the charts to plan a system to meet your needs. Completely illustrated. *General Electric Co.*

... for your copy, circle, No. 303

Meet GE's helical gearmotor line

GE's complete line of electric gearmotors and speed reducers is featured in this 16-page brochure, much of which is in full color. Pictures—product, cutaway and application—tell the story of the integral and all-motor units and the separate reducer. *General Electric Co.*

... for your copy, circle, No. 304

How to use Pacific gearmotor

According to this brochure GE has taken the customer-preferred motor features gleaned from its 25 years' experience in the gearmotor field and incorporated them into this Pacific "55" motor. Read all about it in these eight pages and follow the step-by-step photo sequences showing how to use the gearmotor. *General Electric Co.*

... for your copy, circle, No. 305

Vertical motor for your pumping needs

Bearing a certain resemblance to the Explorer's nose cone, this hollow shaft vertical motor claims a more modest fame as a pumping aid. A full-color six-page brochure shows you why in 20 pictures, one of them a full-page cutaway displaying special features. *General Electric Co.*

... for your copy, circle, No. 306

30 slide projections on drip-proof units

This book of pictures on GE's drip-proof motors is as useful as it is colorful. Product, application and cutaway pictures accompanied by informative captions tell all you'll need to know about this useful line, with its ratings up to 125 hp. *General Electric Co.*

... for your copy, circle, No. 307

Gearmotors for low-speed drives

It's easy to select a gearmotor for your needs if you follow the three basic steps given in this leaflet for determining shaft speed, power supply and horsepower or torque. Cutaways give the inside story on design features while dimension and selection charts complete the book. *General Electric Co.*

... for your copy, circle, No. 308

Simplified motor control selector

This four-pager makes your selection of a motor control easy with its charts on an a-c. manual starters, reversing drum switches, control stations and parts kits. Illustrated. *Square D Co.*

... for your copy, circle, No. 309

Here's a timer for your job

Take time out to look at this six pager on pneumatic and electronic timing relays. You'll find a timer for general purpose applications, machine tools and automation circuits. A variety of enclosures and interlock kits are pictured also. *Square D Co.*

... for your copy, circle, No. 310

Photo album on motor applications

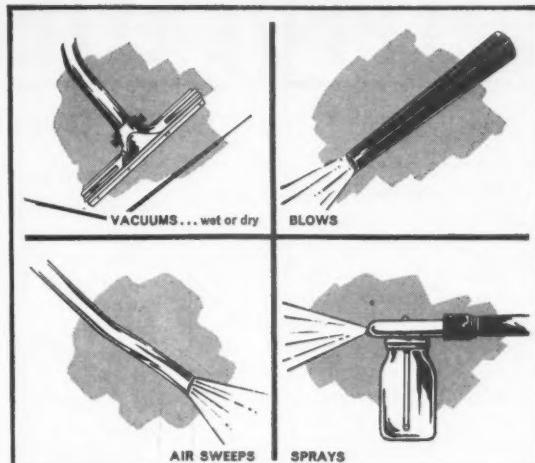
Many motors for many uses are pictured in this 12-page photo book while a two-page cutaway points out 20 design advantages. Among the motors briefed are drip-proof face mounted, totally-enclosed fan-cooled, explosion proof normal speed and fractionals. *Sterling Electric Motors, Inc.*

... for your copy, circle, No. 311

How a static switching system works

If you want the inside story on static switching systems, request this eight-page leaflet with its examples of units in operation. It's easy to read and understand, with its diagrams and photographs. *General Electric Co.*

... for your copy, circle, No. 312



**DOES ALL THIS...
AND PLENTY MORE***

**CLEMENTS
Cadillac QUIK-VAC®
MODEL 14**



Exclusive 2-speed power unit easily detaches for use as hand or shoulder carried blower-suction cleaner.



* Many pieces of optional equipment available for handling all kinds of cleaning, maintenance and production jobs.

YOU SAVE... time, trouble and dollars with the versatile and dependable Cadillac Quik-Vac. Two speeds for greater utility—Simplest hookup! Hose can be attached to dirt container, to power unit inlet, or power unit outlet without additional couplings and hose—and only Clements-Cadillac has it. (Patent applied for.)

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Cadillac QUIK-VAC®
MODEL 21**

Versatile clean-up teammate! Powerful, yet portable with big capacity... triple filter... disposable dust bag... three circular bumpers for all-around protection. 8 piece set of cleaning tools included at no extra cost!



FLOATING BRUSH
In rug nozzle adjusts automatically to any type of floor covering.

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Industrial Division

CLEMENTS MFG. CO.
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SINCE 1910

Specialists in vacuum cleaning equipment for home, business and industry.

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HELPFUL LITERATURE

for the West's plant
operating executives

FOR YOUR FREE COPIES, circle appropriate key numbers on postcard, page 67

180 loose-leaf pages on speed reducers

Geared to Grant's complete line, this 180-page pocketbook on speed reducers, custom and stock units digests information on sizes, ranges, capacities and types with illustrations, schematic drawings and specifications. Speed reducer section presents the eight basic types available in worm and gear, single and double reductions, and helical and mitre gear with reduction ratios up to 3,660:1.

Grant Gear Works, Inc.

... for your copy, circle, No. 125

Performance data sheet on direct drive blowers

A most complete performance data chart fills this four-page leaflet on non-overloading Class 1 direct drive blowers. Briefed are general construction features, motor construction, finishes and ratings. Dimensions and specifications included. *Peerless Electric Co.*

... for your copy, circle, No. 126

8-page specification sheet on mechanical tubing

Mechanical properties, size tolerances, gage tolerances and cut-length tolerances make up this chart sheet on electric-resistance-welded carbon steel mechanical tubing. How to select and order the correct welded tubing for your needs is thoroughly explained. *Babcock & Wilcox Co.*

... for your copy, circle, No. 127

How to operate the one-man gang

A pocket-size operator's manual for Towmotor's one-man gang lift truck reveals new handling and stacking techniques, safety tips and accessories for speedy handling of special loads. Illustrated and indexed, the guide aims at improving general driver efficiency. *Towmotor Corp.*

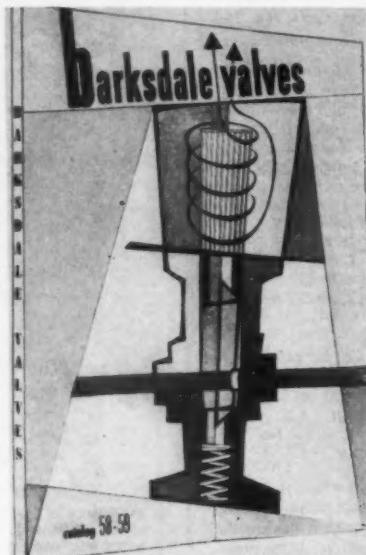
... for your copy, circle, No. 128

Solve manufacturing problems with hydraulic Multipress

A multitude of manufacturing problems can be solved with the hydraulic Multipress, according to this 28-page two-color booklet. And it has many photographs of the Multipress in action on the production line to illustrate the point. Operation and available accessories are thoroughly outlined. *Denison Eng. Div., American Brake Shoe Co.* ... for your copy, circle, No. 129

56-page valve selection, application guide book

The 56 pages of this valve selection-application book, neatly bound in a colorful cardboard cover, explain the



Shear-Seal leak proof principle of valves rated for oil, water and air pressures ranging from 0 to 10,000 psi. Simple graphs determine means of calculating pressure drop, discharge and velocity of liquids. A final section summarizes the probable causes and remedies of maintenance problems. *Barksdale Valves*.

... for your copy, circle, No. 130

32-page illustrated guide to metallic power rectifiers

This extensive collection of notebook sheets on rectifiers utilizing germanium, silicon and selenium semiconductors explores such widely varied applications as anodizing, battery chargers, electroplating and complete conversion systems. For each application there is a detailed description of the components used. If you get the basic guidebook you will automatically receive supplementary pages for insertion as new developments occur. *Sel-Rex Corp.*

... for your copy, circle, No. 131

56-page thermometer book is cool, man, cool

You won't get hot under the collar if you have this basic data book on thermometers which tells all about indicators, recorders, transmitters and electric and pneumatic control instruments. Vapor, gas and mercury-actuated thermometers and thermal systems for use with a wide range of temperatures are all explained, along with separable wells and other accessories. *Minneapolis-Honeywell Regulator Co.*

... for your copy, circle, No. 132

34-page picture book on special trucks

You'll find a hand truck for every purpose in this loose-leaf notebook and many large pictures will give you good ideas on how to use them efficiently. A table of contents guides you quickly to trucks for building and plant maintenance, parts handling, building materials, bar stock, produce, clothing and paint, to mention just a few. Price list and index complete the book. *Rol-Away Truck Mfg. Co., Inc.*

... for your copy, circle, No. 133

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WESTERN INDUSTRY — March 1958



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(at less cost)

sure way to offset tightening profits

Improving profits in spite of rising costs? Every day more industries are learning how...with Fibreboard industrial packaging. That's because Fibreboard-produced corrugated and solid fibre containers, paperboard, and folding cartons provide *natural economy*...almost unlimited uses...more efficient packaging techniques.

Low-cost, efficient Fibreboard industrial packaging protects small, delicate component parts. Explosives. Heavy machinery. Glassware. Furniture. Appliances. Bulk materials (chemicals, asphalt).

Fibreboard means packaging economy for *all* industries.

Whatever the size, shape, or protective requirements of your product, it will pay you to investigate the proved advantages offered by Fibreboard experience and facilities. Talk it over with your Fibreboard representative.

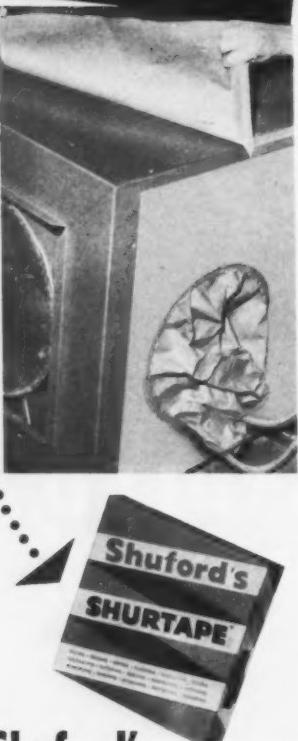


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**HOLDS FAST
IN
HIGH TEMPERATURES**



**Shuford's
SHURTAPE®**

Shuford's SHURTAPE CP-15 is especially designed for masking on finishes subject to extreme heat in the baking process . . . and it costs less to use!

This rubber impregnated crepe paper backed pressure-sensitive tape is flexible, adheres instantly and strips clean quickly. Withstands very high temperatures of bake ovens.

Use Shuford's SHURTAPE CP-15 on any flat or crinkled surface!

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ZELLERBACH PAPER COMPANY
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CLOTHES LINES • TWINES
PRESSURE-SENSITIVE PAPER TAPES
SASH CORDS • WEATHER STRIPPING
COTTON & RAYON YARNS • EXTRUDED PLASTICS

World's Largest Manufacturers of
Cotton Cordage 3248

... for more details, circle No. 43

**Complete 34-page book
on heavy-duty tools**

A little cartoon character leads you through these 34 pages of heavy-duty electric tools, pointing out special features of drills, saws, grinders, hammers, screw drivers, nut runners and sanders and polishers. His words are supplemented by pictures and specifications. Milwaukee Electric Tool Corp.

... for your copy, circle, No. 134

**Eight economic advantages
of rotary compressor, pump**

"More air at less cost" proclaims this 12-page leaflet on single-stage rotary compressors and vacuum pumps. It supports its declaration with eight reasons, then pictures and explains construction features. Includes specs. Allis-Chalmers.

... for your copy, circle, No. 135

**40-page engineering book
of hydraulic tables**

Attention, hydraulic engineers and designers! These 40 pages of hydraulic tables and engineering data are what you need if you're concerned with presses for such applications as laminating plastics, pressing, dry ice, die hobbing, plastic preforming and

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**SAFETY
GUARDS**

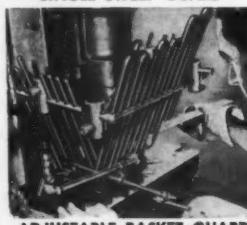
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No. 14 Pittsford Road, Mendon, N.Y.

... for more details, circle No. 44

metal-powder compacting. Conversion tables, decimal equivalents, ram capacities, steep pipe tables, special gravities—they're all here. Hamilton Div., Baldwin-Lima-Hamilton Corp.

... for your copy, circle, No. 136

**Brief fold-out describes
maneuverable lift truck**

Peak maneuverability is the chief advantage set forth by this six-page leaflet for the Model H electric fork lift truck with rear-wheel drive and a mast recessed between the load wheels. A good diagram explains exactly how the truck maneuvers, while pictures and text treat its other features. Lewis-Shepard Products, Inc.

... for your copy, circle, No. 137

**Thorough stock list
of steel pipe, tubing**

Any kind of stainless steel or carbon and alloy steel tubing and pipe you need will be listed on these 30 pages. A key to the abbreviations used will make your job of selection quick and easy. Tubesales.

... for your copy, circle, No. 138

**Quick fasteners
at a glance**

This snappy 24-pager briefs you on three complete lines of quarter-turn fasteners with dimensional data, comprehensive installation instructions and where-to-use information. Many pictures and drawings make the text clear. Fastex Div., Illinois Tool Works. ... for your copy, circle, No. 139

**Condensed reference file
of plastic raw materials**

Here's the 1958 edition of Bakelite's condensed reference file on phenolics, vinyls, styrenes, epoxies and polyethylenes. Indexed and lavishly illustrated, it updates you on each of these plastic raw materials. Bakelite Co., a div. of Union Carbide Corp.

... for your copy, circle, No. 140

WHITMAN & BARNES



DRILLS



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WESTERN INDUSTRY — March 1958

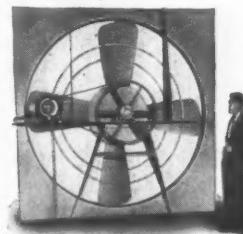
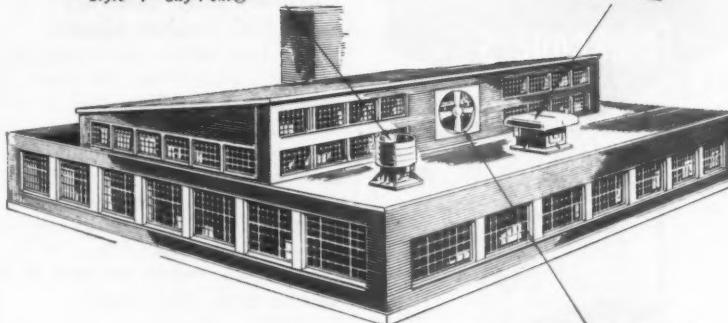
144 pages of general data on low voltage equipment

Low-voltage distribution equipment and components are packed into this 1958 general data book. You can't afford to be without this condensed information on safety, disconnect and open-knife switches, circuit breakers, service entrance equipment, lighting and distribution panelboards, wireway, motor control centers, and much other equipment. *Distribution Unit, General Electric Co.*

... for your copy, circle No. 141



Style "V" Sky-Vent®



VENTILATE AND/OR HEAT YOUR PLANT QUICKLY, EFFICIENTLY, AT LOW COST SUMMER OR WINTER

Eccentric gear press specification sheet

This eight-page leaflet should solve any pressing problems with its tables of specifications on stroke, shut height, slide adjustment, strokes, etc., for eccentric gear, straight-side presses. Illustrations disclose construction details and heavy-duty press applications. *Hamilton Div., Baldwin-Lima-Hamilton Corp.*

... for your copy, circle No. 142

Facts you should know about glassed pumps

"It's What's Inside That Counts," a 16-page fact book on the glassed centrifugal pump, asks and answers the 30 most frequent questions on the glassed centrifugal pump. *Goulds Pumps, Inc.* ... for your copy, circle No. 143

Introductory articles on vacuum plating

A collection of illustrated articles explains vacuum metallizing, or plating, its uses and advantages, and the basic steps in the process. Final articles treat specific units from the design and construction standpoint and with specifications. *F. J. Stokes Corp.*

... for your copy, circle No. 145

"BUFFALO" POWER ROOF VENTILATION—No plant is modern and efficient without adequate ventilation, and it need not be a major expense. "Buffalo" Sky-Vent Roof Ventilators have proved to be one of the most reasonable and completely satisfactory solutions. They're delivered to you as ready-to-run units; thus, you save on installation cost. They handle large plant areas without need for duct systems, a further saving. They're efficient, husky and weatherproof. In combination with heater sections mounted under roof openings — or with heating coils and various damper arrangements built integrally into Style "H" stack — they can readily be used for winter supply of heated make-up air. Write for Bulletin FM-2345 and check these "Buffalo" ventilation values with the "Q" Factor*!

"BUFFALO" PACKAGE PROPELLER FANS—Modest in first cost, and the most inexpensive fans to install, "Buffalo" Package Propeller Fans provide all the desirable features for heavy-duty industrial and commercial ventilation. In 24" to 120" sizes, they deliver fresh, live air to any area from a small room to a whole plant or a giant auditorium. Very efficient at slow speeds, they are unusually quiet — and built for a lifetime of low-cost, beneficial ventilation. Ask your Engineer or Contractor about "Buffalo" Fans, Heating and Ventilating Units or Central Air Conditioning Cabinets!

* The "Q" Factor — the built-in Quality which provides trouble-free satisfaction and long life.



BUFFALO FORGE COMPANY

155 MORTIMER STREET

BUFFALO, N.Y.

Canadian Blower & Forge Co., Ltd., Kitchener, Ont.

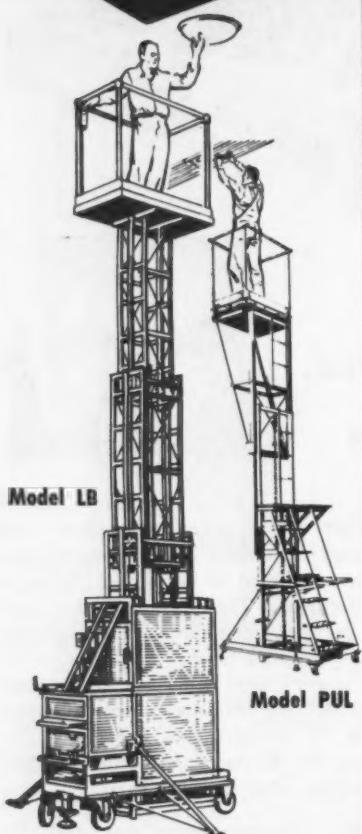
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90% of overhead servicing can be done faster and safer with these ECONOMY Hi-Reach Telescopers!



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Hi-Reach Telescopers
Four heights 20 ft. to 35 ft.
Standard Models from \$1510.00 up.

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Three Standard Models	
No. 1 — Lift 10' 9"	\$370.00
No. 2 — Lift 11' 9"	\$390.00
No. 3 — Lift 15' 0"	\$400.00
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ECONOMY
ENGINEERING

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70

**Practical how-to book
on tape controlled borer**

How to make up a blue print, program a part, punch tape and put work on the machine is explained in this 12-page leaflet on Electropoint tape controlled drilling, tapping and boring machines. Case histories illustrate special features and cost cutting possibilities of the tape controlled turret drill. *Burg Tool Mfg. Co., Inc.*

... for your copy, circle No. 146

**Updated pine directory
with 350 lumber plants**

The 1958 WPA membership directory lists more than 350 plants and sales offices handling 10 species of Western pine. Charted in 20 pages are the species each mill manufactures and the proportion of each, staple products, factory products and specialties. Dry kiln facilities are also shown. *Western Pine Assn.*

... for your copy, circle No. 147

**Cause and cure book
for LPG carburetion**

This 20-page service manual enables you to determine every possible cause of erratic or poor operation of any L.P. Gas engine and then tells you what to do about it. A real trouble shooter, it has a list of all the tools required, explicit instructions, a page on terminology and clear indexing. Priced at \$1.00. *Beam Products Mfg. Co.*

... for your copy, circle No. 148

**Western gantry cranes
for Western users**

To date heavy material handlers in the West have been handicapped when it comes to gantry cranes because they had to come from eastern sources. Now they are made in the West for Westerners. Find out about them in this four-page leaflet—where they best fit into the material handling picture and their specifications. *Alden Equipment Co.* ... for your copy, circle No. 149

**Engineering handbook
for Koroseal pipe**

Designed especially for engineers and architects, this specification book



on rigid Koroseal pipe reports methods of fabrication, chemical resistance and working pressure at various temperatures. Flow charts and other technical data complete the book. *Howard Supply Co.*

... for your copy, circle No. 150

**How to control shock
by using cork cushions**

Armstrong's Vibracork is a vibration, shock and noise controlling material recommended for massive machinery that is difficult to isolate. See it in action in this four-page notebook leaflet with specifications and illustrations of typical installation arrangements. *Korfund Co., Inc.*

... for your copy, circle No. 151

**All-steel, helical gear
shaft mounted drives**

A new 32-page manual describes the complete line of all-steel, helical gear, shaft mounted drives for applications in the range from $\frac{1}{2}$ to 50 hp. and from 420 to 5 rpm. output speed. The new booklet includes description of unit design and construction . . . suggestions on using shaft mounted drives to solve various application problems (plus two pages of installation pictures) . . . full information on how to select the proper size and ratio of unit (including the new high-ratio units and the new size No. 315 for higher hp.) . . . sheave and belt selections . . . and data on accessories. *The Falk Corporation.*

... for your copy, circle No. 152

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... for more details, circle No. 49 on Reader Service Postcard

P is for people, pay, policy and practice

"People and Paychecks" solves the mystery surrounding pay determination by reviewing job descriptions, methods of job evaluation, design of pay structures and administration of pay plans. The result of 35 years of experience, the 75 illustrated pages were designed for use at Standard Oil but the frank discussion will be of value to anyone concerned with pay administration. *Standard Oil Co. of California.*

. . . for your copy, circle No. 153

All you want to know about chemical milling

Barring the Explorer, this 10-page brochure on chemical milling will be of prime interest to design and production engineers in the aircraft and missiles industries. It answers such questions as What is chemical milling? What are its advantages? What metals can be milled? And concludes with design factors and recommendations. Illustrated. *United States Chemical Milling Corp.*

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STANDARD conveyor systems keep heavy, bulky commodities moving with minimum manpower and time loss. Systems can be job-tailored to solve any specific material handling problem — and to meet a wide range of requirements.

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STANDARD CONVEYOR COMPANY, General Offices: N. St. Paul 9, Minnesota. Sales and Service in principal cities.

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"Power Transmission and Conveying Machinery"



This title heads up descriptions, specifications, application information and selection data on products for power transmission, conveying and elevating service. The book reviews chain for practically every power transmission, timing, tension and conveying application. *Chain Belt Co.*

. . . for your copy, circle No. 155



Live Roller and Gravity Roller System handles 55 gal. drums from storage thru filling and weighing operations to shipping



SEATTLE: Russell G. Daley & Associates,
P. O. Box 1655, Lake City Station
SAN FRANCISCO: 840 Harrison St.
LOS ANGELES: 115 E. 23rd St.

Brief selection guide to blast cleaning abrasives

An article on the importance of the right abrasive opens this 12-page article leaflet on five different blast cleaning abrasives. It charts abrasive characteristics, then treats Tru-Steel shot, Mallesabre, angular grit, Malan steel and Samson shot in detail. Illustrated. *Pangborn Corp.*

. . . for your copy, circle No. 156

40-page photo album on lock-type fasteners

Designed on the principle that one picture is worth a thousand words, this book of 40 pages exhibits twice that many action pictures and drawings of six different fasteners: Quick-lock, Link-lock, Spring-lock, Dual-lock, Roto-lock and Hinge-lock. Complete with specifications, this book is a must if you're in the market for fasteners. *Simmons Fastener Corp.*

. . . for your copy, circle No. 157

24-page picture-story book on metal finishing process

Once upon a time, before World War II, grinding, deburring, descaling and polishing were all done by hand. Today the Roto-Finish process has put precision finishing on a mass production basis. Read the story of this mechanical finishing process in this 24-page booklet, see the machines, accessories and chips used. *Roto-Finish Co.* for your copy, circle No. 158

8-page specification sheet on heating and ventilating

This notebook spec sheet, with its performance, dimensions and capacity charts for heating and ventilating equipment, highlights centrifugal fans, power roof ventilators, propeller fans and accessories and unit heaters. Illustrated. *Ilg Electric Ventilating Co.* . . . for your copy, circle No. 159

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. . . for more details, circle No. 51

WESTERN INDUSTRY — March 1958

No rock, lots of roll with synthetic wheel

Disowheel, an industrial truck wheel of a new synthetic material, is introduced in a four-page pamphlet as the answer to the problems of worn out rubber tires or chewed floors that result from metal ones. To find out about sizes, wearability and on-the-job tests, read the check list in this pamphlet. *Yale & Towne Mfg. Co.*

... for your copy, circle No. 160

How to select diesel engine fuel

What diesel engine users should know and look for when selecting fuel comprises this 16-page illustrated book with a fuel selection chart. "Fuel Oil and High RPM. Diesel Engines" applies to all makes of diesels operating between 1,200 and 3,000 rpm. and points out the effect of various grades of fuel on engine life and performance. *Detroit Diesel Engine Div., General Motors Corp.*

... for your copy, circle No. 161

Aid to solving moisture problems

Moisture content is something you can't afford to ignore if you're concerned with webs of traveling sheet materials or individual pieces, such as paper, textiles, plastics or leather. This eight-pager presents moisture problems in these industries and solves them with the Aviso web conditioner. The illustrated leaflet also features auxiliary equipment, location and installation, operation and testing. *J. O. Ross Eng. Corp.*

... for your copy, circle No. 162

The art of accessorizing drilling, tapping machines

Here is a complete line of accessories for drilling and tapping machines designed to make your present equipment more versatile and efficient. The 12 illustrated pages show, for instance, a precision clutch type tapping head, tee slots, a coolant system, cam feed, table wear plate and many other units. *Edlund Machinery Co.*

... for your copy, circle No. 163

Introducing Microdyne, spray dust collector

The newest thing in any orbit is a miniature dust collector which can be installed in existing duct work. Read what several trade journals have said about it and get complete specifications in this six-page illustrated leaflet. *Joy Mfg. Co.*

... for your copy, circle No. 164

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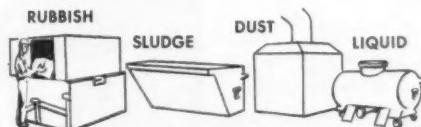


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Industrial Ropebelt conveyor for handling bulk materials

If you handle bulk materials of any kind, consider this Ropebelt, a conveyor that carries the belt on linked idler assemblies suspended at intervals between two wire ropes. A four-page illustrated folder tells you all about it and explains why it's economical to buy and install. *Goodman Mfg. Co.* . . . for your copy, circle No. 165

Story behind manufacture of flame cutting nozzles

With this 12-page pocket size folder you can follow the production steps that go into Oxweld flame cutting nozzles. A series of seven pictures and captions tells the story as well as giving advantages of the nozzles. *Linde Co., div. of Union Carbide Corp.*

. . . for your copy, circle No. 166

Introducing a new line of Freon compressors

A four-page leaflet introduces a new line of single-action enclosed-type multi-cylinder compressors for all applications in air conditioning and refrigeration. Complete and cross-cut photographs illustrate special features and supplement brief text. Includes dimensions and specifications. *Worthington Corp.*

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Lift truck applications to metalworking field

This material handling survey of the metals industry stresses the im-



portance of including material handling functions and equipment in the advance planning stage when new industrial buildings are being considered. It illustrates the point with a case history showing savings in manpower and increased production. *Towmotor Corp.*

. . . for your copy, circle No. 168

1958 buying guide to 200 Western mills

You'll never be out on a limb if you have this 38-page list of lumber mill

names and addresses handy. The where-to-buy directory charts 200 mills in Oregon, Washington and northern California with their key personnel, facilities and types of lumber handled, including Douglas fir, West Coast hemlock, Western red cedar and Sitka spruce. *West Coast Lumbermen's Assn.*

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Selection guide for roof ventilators

The long, low silhouette in contemporary industrial buildings is here to stay. To blend with it you should have low-silhouette power roof ventilators. This eight-page leaflet, with illustrations and specifications, will help you select the proper exhaust or supply ventilator to meet both your ventilation and appearance problems. *Ilg Electric Ventilating Co.*

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Complete 42-page book on Rosan locking ring

Opening with an explanation of the Rosan locking principle, this complete book spotlights the locking ring for inserts and studs. A glance through the book shows applications, design data, installation and removal procedures and much other information. *Rosan, Inc.*

. . . for your copy, circle No. 171

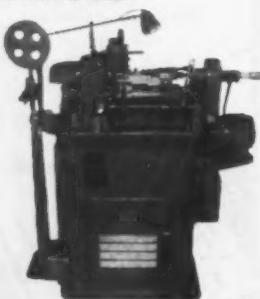
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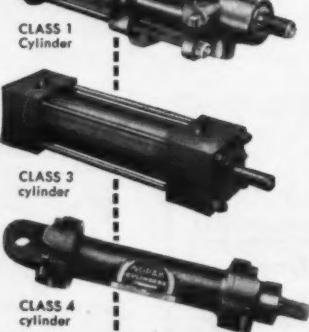
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WESTERN INDUSTRY — March 1958

The uses unlimited of the Plug-in Limit

The latest issue of "Uses Unlimited," an eight-page magazine, shoots along to the design engineer and other users of precision switches pictures and descriptions of many new types, including the Plug-in Limit, a quick-change artist for machines. Designers with high temperature problems are updated on the high temperature switches with many application examples. *Micro Switch Div., Minneapolis-Honeywell Regulator Co.* for your copy, circle No. 172

Engineering data book on fans and blowers

A visual index fans your interest in this 16-page engineering book with its graphic story of progress in propeller-type fans, and installation, operation and maintenance facts. If you want to know the air change required for good ventilation, recommended velocity for the exhaust hood or the latest on noise ratings, it's all here. *Hartzell Propeller Fan Co.* . . . for your copy, circle No. 173

How to modernize a double crank press

If you have an obsolete straight side or gap frame double crank press send for this 16-page idea book which recommends 42 different kits for bringing old presses up to date. Diagrams illustrate each. *E. W. Bliss Co.*

. . . for your copy, circle No. 174

How to guide the arc straight to the mark?

. . . With automatic welding machinery, says this four-pager on multi-purpose machines and positioners with automatic checking, travel and ejection for all welding processes. Circumferential welding machines, longitudinal positioners and weld roll planishing machines are all pictured in operation. Specs included. *Airline Welding Sales, Inc.*

. . . for your copy, circle No. 175

Lightning glance at dielectric silicones

These 12 illustrated pages illuminate the properties of silicones as dielectric materials, treating molded parts, tapes, sheet insulation, surface coatings, filling, impregnating and sealing materials. Current laboratory data, backed by field applications, are given for each physical form of silicone discussed. *Dow Corning Corp.*

. . . for your copy, circle No. 176

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CM HOISTS

**CM METEOR ELECTRIC WIRE ROPE
HOIST** $\frac{1}{2}$ to 5 ton capacities — Compact, enclosed design. Low headroom. Continuous duty motor with thermal overload protection for heavy duty service. Precision bearings and helical gears for long life. Only 110 volts at push button control. Hook suspension; plain, geared or motor driven trolley.



CM LODESTAR ELECTRIC CHAIN HOIST — $\frac{1}{2}$ to 1 ton capacities — First truly heavy duty version of small electric hoist. $\frac{1}{4}$ ton model weighs only 51 lbs. Heavy duty self-adjusting brake, plus exclusive regenerative electrical braking. Upper-lower safety limit switches. CM-Alloy load chain. Single and three phase.



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Hoist** — $\frac{1}{2}$ to 10 ton capacities — Easy to carry. One ton model weighs only 36 pounds. Made of tough aluminum alloy. CM-Alloy load chain. High efficiency. Lifetime lubrication.



CM PULLER — "The One Man Gang" — $\frac{1}{2}$ to 6 ton capacities — Lifts or pulls at any angle. Lever handle operation. Automatic load brake holds at any point. $\frac{1}{4}$ ton model weighs only 13 pounds and fits in a tool box. CM-Alloy load chain.

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Updated equipment book on Heliwelding items

Meet the new manual, semi-automatic, automatic and accessory equipment used for Heliwelding, tungsten arc welding process, in this revised 24-page book. Added to the line are a weld cycle control, holder pack, gun for spot welding and crater eliminator control, to mention a few, and all are illustrated. The Heliwelding process is thoroughly explained. *Air Reduction Pacific Co.*

... for your copy, circle No. 177

Table and chart book on gas equipment

The latest data tables and work rate charts make this 36-page book on industrial gas burners, furnaces and accessories of value to anyone using this equipment. Much equipment for heat treating, metal melting, soldering and drying is pictured with specifications. *Charles A. Hones, Inc.*

... for your copy, circle No. 178

6-page basic data sheet on gyroscope, pickoffs

The first page of this basic data sheet is devoted to the a-c. pickoff and

potentiometer pickoff and a list of the respective parameters that can be met. A page is included on four different mounts for the gyro, including cantilever incorporating pin orientation, cantilever for limited "G" load operation, flange mount and horizontal mount. Environmental conditions that the gyros are designed to meet are given as well as a list of design features and brief motor information. *Gyro Dynamics Div., Darco Industries Inc.*

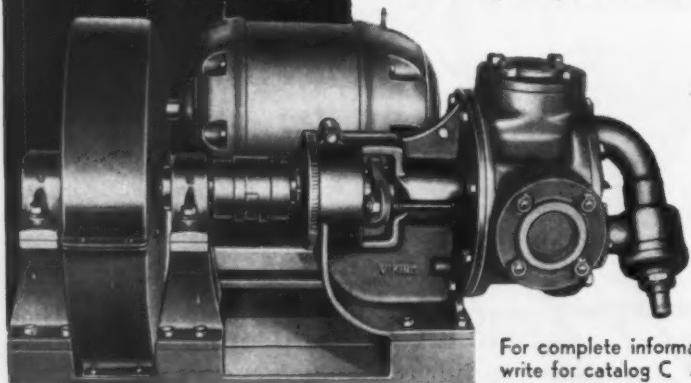
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Reference book details copper corrosion factors

Continuous laboratory research and field study have produced a revised edition of "Corrosion Resistance of Copper and Copper Alloys," a 32-page reference to help the materials engineer select the copper alloy best suited for a specific purpose. The booklet divides into six parts on theory and types of corrosion, corrosion resistance, rating charts, typical industrial uses of copper, a list of the company's alloys and finally a questionnaire on process conditions. *Anaconda Co.*

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Introduction sheet

on two precision instruments

The Height-Master, a portable instrument designed for precision layout work, inspection, checking jigs and fixtures, and the Size Master for close dimensional checking are introduced in this four-page leaflet. One full page is devoted to each instrument giving information on operation, range of graduations and different models. Over size height gages are mentioned briefly on the last page. *Pacific Gage Div., Darco Industries Inc.*

... for your copy, circle No. 181

How to engineer dust control systems

You can give your dust problems the brush-off with this 36-page book, which reveals for the first time the operating principles of the Roll-Clean Dynaclone dust filter and tells you how to engineer dust control systems. Thoroughly explained are filters for continuous and non-continuous dust collection and for handling limited air volumes. Specifications, tables and a dust problem analysis sheet complete the book. *W.W. Sly Mfg. Co.*

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Growth and development of the welding industry

Originally a talk before the National Welders Supply Assn., this article is now a 16-page leaflet of facts and figures relating to the welding industry's growth and current status. Statistical charts cover sales, economic growth and projected future growth for each of the four major welding processes. *Air Reduction Co., Inc.*

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... for more details, circle No. 57

64 data packed pages on electric controls

If you use any automatic electrical control equipment, you'll want this 64-page two-color book on applications, construction, and operation features of switches, contactors, clocks and timers. An index divides the book into four sections, each with illustrations, dimensions and specifications. *Zenith Electric Co.*

... for your copy, circle No. 184

Cab Quebec Quantity Quell Watch Quotidiam

Nonsense? No, sir. That's ordering data in "Bondese" a special telegraphic code used by Bond Co. to satisfy in a hurry your requirements for speed reducers, gears, sprockets and chain, flexible couplings and other stock items. You'll find out all about the code, the line, and get engineering data as well, in this 80-page indexed book. *Charles Bond Co.*

... for your copy, circle No. 185

Specification page on silicone rubber sheets

A two-page leaflet describing silicone rubber sheets available from stock includes 50, 60, and 70 durometer and Fiberglas reinforced sheets for -85 to 500 deg. F. applications. A brief outline of the characteristics of each type is given, along with a list of typical properties. *Connecticut Hard Rubber Co.* for your copy, circle No. 186

How to select and buy the proper utility set

If you are an engineer, architect or fan buyer, follow the easy steps outlined in this 50-page book and you'll be able to select and buy the type and size utility set which will meet your needs most efficiently and economically. Here it's as simple as one, two, three; and there is all the information you need: capacities, dimensions, specifications. Illustrated. *American Blower Div., American Radiator & Standard Sanitary Corp.*

... for your copy, circle No. 187

80-page notebook on hydraulic equipment

This loose-leaf notebook divides into seven sections on specific series of air and hydraulic cylinders, each with pictures, drawings and complete specifications. A final section presents clevises, pins, jam nuts and other accessories. *Sheffer Corp.*

... for your copy, circle No. 188

Get the inside story on rider-walkie trucks

This book pictorially assembles and disassembles the Work-saver line of rider-walkie trucks, using sectionalized views and cut-out pages. Operating features of five different models are pinpointed. *Yale & Towne Mfg. Co.*

... for your copy, circle No. 189

Eight-page catalog on sealed, unsealed switches

A complete industrial switch line, both sealed and unsealed types in three basic actuator styles, is contained in this eight-page catalog folder that gives dimensional data, operating capacities and specifications. *Licon Div., Illinois Tool Works.*

... for your copy, circle No. 190

Die spring classification of 500 standard sizes

This 12-page catalog insert classifies die springs in 500 standard sizes and three pressure groups for each size, noting full specifications and prices. Briefly illustrated. *E. W. Bliss Co.*

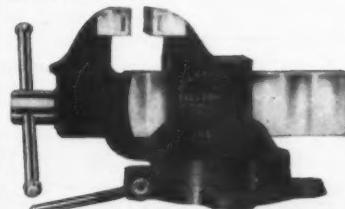
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The fast, modern addressing way

With a Web-O-Print duplicator you can address and mark labels, tags, and cartons in the fast modern way. This device—that prints from stencils you can type or handwrite—is pictured and detailed in this comprehensive four-page brochure. *Weber Marking Systems.*

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"THIS LUBRICANT PRACTICALLY ELIMINATED BEARING REPLACEMENTS"

Says- C. O. SPARKS, INC.
& Mundo Engineering Co. of Los Angeles, Calif.

"Prior to using LUBRIPLATE, we were replacing shaker screen bearings within 60 to 120 days due to lack of or faulty lubrication. Since we started using LUBRIPLATE seven years ago, we have only replaced two shaker screen bearings and these because of natural wear. We now use LUBRIPLATE for general lubrication throughout our plant."

W. T. Ellington, President
Mundo Engineering Co.

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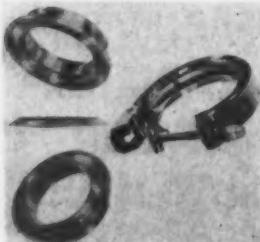
NEW EQUIPMENT

for Western plant operation,
production, and maintenance

USE RIP-OUT POSTCARD, page 67, for more information on products described

TUBING JOINT

. . . connects dissimilar metals

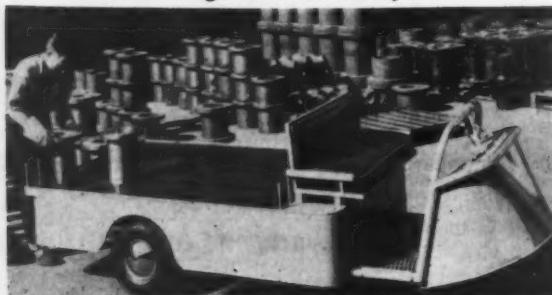


Tubing and ducting of dissimilar metals subject to extreme temperatures can now be connected with a metal tubing joint instead of the organic seals formerly required. The Conoseal joint with a compression type metal gasket, assures perfect fluid line seal even at temperatures of -300 or +1,600 deg. F. and with pressures of 6,000 psig. Available in sizes from 1 to 12-in. O.D., the seal is recommended for high pressure pneumatic systems, liquid oxygen systems, hydraulic, exhaust and fuel systems. *Marman Div., Aeroquip Corp.*

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. . . delivers the goods in a hurry



Speed and economy are virtues of the 2,000-lb. capacity Freight, an electric truck suitable for light and medium hauling and delivery work. The truck, along with a steel plate body and platform, has an automobile type dashboard for controls, foam rubber seats and full elliptic springs front and rear. Optional charging units include the silicone diode rectifier, built into the dash, and a spring reel charger unit. *Laher Spring & Tire Corp.*

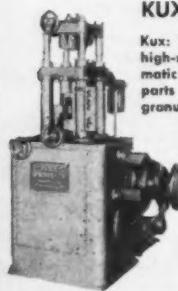
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TO GIVE YOU THE
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Fernholz Machinery Co., 8468 Melrose Place, Los Angeles 46, Calif.
Call FERNHOLZ 4111

OL 3-2360



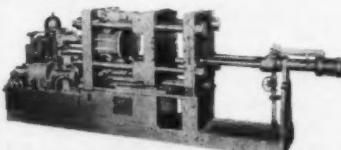
automatic sizing or coining. Ask for Bulletin #4100 FM.

KUX TABLET PRESSES

Kux: The accepted standard for high-speed production and automatic forming of tablets and parts from dry, powdered or granulated materials. Single and multiple punch models, mechanically or hydraulically operated. Sizes: from 50 to 600 tons pressing capacity! Rigid! Rugged! Constructed to meet most severe demands for service. Kux also makes special presses for

KUX DIE CASTING MACHINES

Most complete line of air or hydraulically operated machines for lead, zinc, tin, aluminum, brass or magnesium diecasting. A size and model for every need. Simple, Safe to operate. Economical in cost and upkeep. Hydraulic models equipped with extra large oil reservoirs, oversize oil coolers, filters. Sizes: from 13"x6" between the bars to 40"x32" with 1000 tons die locking pressure. Write for Bulletin #6725 FM.



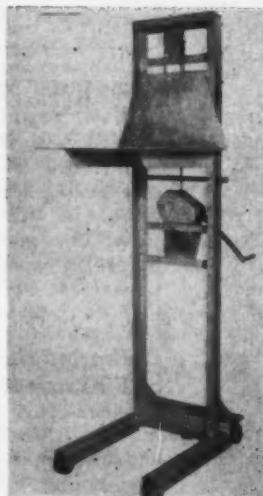
FERNHOLZ MACHINERY CO., 8468 Melrose Place, Los Angeles 46, Calif.

. . . for more details, circle No. 60 on Reader Service Postcard

WESTERN INDUSTRY — March 1958

HALF TON LIFTER

. . . with newly designed cable winch



. . . for more details, circle No. 195 on postcard

A cable winch which reduces handle effort to 27 lb. at full load will keep you from being a crank when you work this crank up, crank down 1,000-lb. lifter. Lifting speed is 1½ in. per handle revolution on this Half-Tonner, with a vertical lift of 69 in. from floor level. Platform is 24 in. square while overall working depth is 38 in. Running gear consists of four 4-in. semi-steel wheels, two of which are swivel-mounted and two, fixed. A foot-operated floor lock between the swivel wheels positions the unit firmly during loading and unloading. *Colson Corp.*

PVC BAR STOCK

. . . for corrosion resistant parts



lengths to 20 ft. Try machining sealers, valve components or fasteners. *Joseph T. Ryerson & Son, Inc.*

. . . for more details, circle No. 196 on postcard



Steel work by San Jose Steel Co., Inc.

"Building with steel makes expansion easy"



F. GRAHAM JUDGE

Vice President and General Manager,
Westates Steel Company, Santa
Clara, California.

"Even if we weren't in the business, we would have built this plant of steel. It went up in 1955 and a year later, we added a new wing to double our area, enclosing nearly 37,000 square feet. The job was done in record time. And the original USS Sheets were re-installed on a wall of the new extension to give us considerable saving. The result is a weather-tight, stable structure, both functional and economical...with still more possibilities for

low-cost expansion. That's why we used United States Steel for our own job... and why we recommend it for so many of our customers."

MORE INFORMATION about steel buildings can be obtained from your local Steel Service Center, your architect or builder. Or write, outlining your interests, to the address below. Columbia-Geneva Steel Division, United States Steel Corporation, Department WI, 120 Montgomery Street, San Francisco 6.

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... for more details, circle No. 62 on Reader Service Postcard

Hassall

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Available with complete line of accessories for use with almost any type of storage.



"liquid materials handling"® equipment

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See Yellow pages for your local sales representative

... for more details, circle No. 63 on Reader Service Postcard

WET-DRY VACUUM

... cleans from floor to ceiling

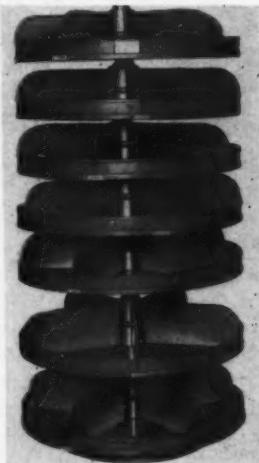


An all-purpose vacuum, with moisture proof motor and a 10-gal. tank, will clean just about everything from the floor to the ceiling and on the way get walls, carpeting, upholstery, bins, blinds and pipes. Other features are easy-roll wheels, handle and tool basket. It is powered by a 1/2-hp. universal type, constant duty, by-pass motor which drives a two-stage turbine and runs at speeds up to 13,000 rpm. at full load. *Clarke Sanding Machine Co.*

... for more details, circle No. 197 on postcard

NEED A BOLT?

... just spin a bin



... for more details, circle No. 198 on postcard

TAPPED DOWEL PINS

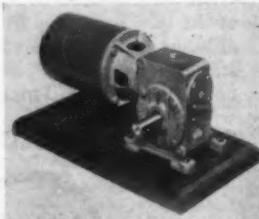
... for mounting die details

Men on the press detail will welcome these tapped dowel pins because they do away with what is otherwise the awkward and time-consuming job of mounting die detail on the shoe with plain dowel pins. Mounting preparation for tapped pins requires drilling only to the insertion depth of pin, while removal is accomplished from the top of the die shoe instead of from the bottom. *Richard Brothers Punch Div., Allied Products Corp.*

... for more details, circle No. 199 on postcard

WORM REDUCER

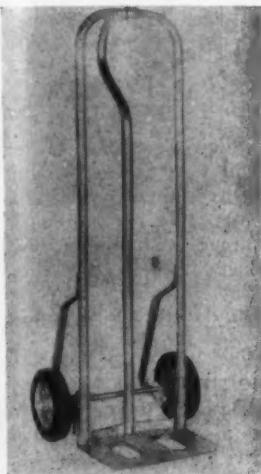
... operates in 40 positions



Versatile is the word for this flanged type worm reducer which operates in 40 different positions on conveyors, pumps, mixers, shutters, food machinery, machine tools, and much other equipment. It fits NEMA "C" flange motors and comes in 1 1/8, 1 5/8 and 2 1/4 sizes. It transmits fractional and small hp. from .03 to 3.5 with output rpm.'s from 335 to 29. *David Brown, Inc.*

... for more details, circle No. 200 on postcard

LIGHT WEIGHT TRUCKS ... for off-truck delivery



The very light weight of this line of aluminum trucks makes them ideal for off-truck delivery as well as for transporting boxes, cartons, cases and drums in plants, warehouse or stock rooms. Trucks come with either double handles or the safety loop type, and with roller bearing rubber tired wheels. The tubular frame and plate nose are of high-tensile aluminum alloy and the complete bolted assembly permits quick, easy repair or replacement of all parts. Overall size is 20 x 46 in. *Nutting Truck & Caster Co.*

... for more details, circle No. 201 on postcard

BABY LUB SYSTEM

... pampers bearing machinery

Accumite, a low pressure, positive displacement type of miniature lubrication system, lubs machine tools, labeling and packaging equipment and other types of machinery with numerous bearings and limited installation space. Heart of the system is a tiny metering valve which services each bearing individually. The centralized system can handle a wide range of light grade lubricants and offers four types of pumps to pressurize the system lines and actuate measuring valves. *Alemite Div., Stewart-Warner Corp.*

... for more details, circle No. 202 on postcard

MAGNETIC CONVEYOR

... for small parts transfer



To convey lightweight ferrous metals at a 45-deg. incline is the job of this magnetic parts conveyor, which will take parts from a nail heading machine, screw machine or punch press and discharge them into a hopper, tote box or other container. Conveyor bed is an aluminum box

channel with two magnets. The three-ply duck belt of 8-in. wide neoprene black has non-skid rubber ribs 5/32 in. high. *Rapids-Standard Co., Inc.*

... for more details, circle No. 203 on postcard

PUSH BUTTON SPRAY

... retouches power tools

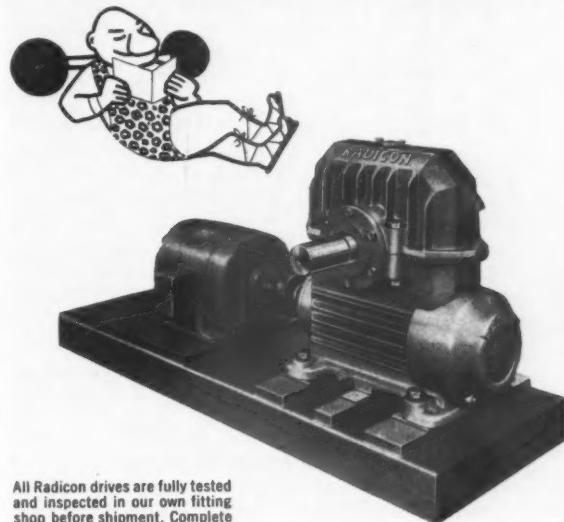


Tool Div.

... for more details, circle No. 204 on postcard

Almost Nothing To Do...
when you select—

RADICON COMPLETE DRIVES



All Radicon drives are fully tested and inspected in our own fitting shop before shipment. Complete Drives are delivered with all lubricants furnished, and ready to set.

Eliminate a major part of your drive design problems—just position the efficient new Radicon Complete Drive, set six bolts, and you're ready to roll!

No need to buy reducers, motors, couplings—then spend time shimming and aligning. Radicon reducers and motors are already carefully shimmed and aligned on heavy fabricated steel base plates, of double box construction, firmly ribbed for rigidity. This means minimum stress at the flexible coupling...long service, low maintenance.

Fan-cooled Radicon Speed Reducers, like the type RHU shown with the above complete drive, are being specified by original equipment manufacturers in many industries these days. They have learned Radicon's ability to withstand extremes of temperature, dust, dirt and rain—all with low initial cost, and low maintenance! Find out for yourself—write or phone today.

Immediate delivery 3" to 14", all standard ratios from 5:1 to 60:1. Radicon complete drives supplied by all authorized David Brown factory branches and distributors.



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Gear Products for: Mines, paper and pulp mills, chemical plants, food processors...conveyors, hoists, agitators, screens, deckers, filters, canning machines, and other industrial equipment.

... for more details, circle No. 64 on Reader Service Postcard

PORTABLE ELEVATING TRUCKS

... with telescoping masts



... for more details, circle No. 205 on postcard

FLOW CONTROL VALVE

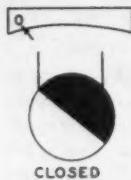
... impervious to temperature change

This 2,000-psi. hydraulic valve, in $\frac{1}{4}$, $\frac{3}{8}$ and $\frac{3}{4}$ -in. sizes, is unaffected by changes in temperatures and viscosity because of its metering orifice design. The principle

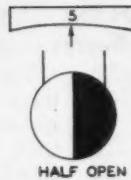
If you're looking for a truck that will clear standard doorways, yet lift 1,000-lb. loads as high as 10 ft., 10 in., you'll want to investigate four telescoping mast trucks recently added to this firm's portable elevating truck line.

Power for lifting is supplied by means of a 12-volt battery-operated hydraulic system.

In addition to the standard model which comes with 26-in. adjustable forks, there are other fork lengths, drum-stacking devices, crane booms, rams or platforms. They may be quickly changed in the field. *American Pulley Co.*



CLOSED



HALF OPEN



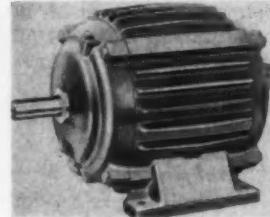
FULL FLOW

involved is that the rate of fluid flow through an orifice that connects two bodies of fluid will remain constant when the pressure differential between the two bodies of fluid remains constant. Valve meets JIC standards and is provided with multiple selected ranges, enabling one flow control valve to do the work of many. *Denison Eng. Div., American Brake Shoe Co.*

... for more details, circle No. 206 on postcard

FAN MOTOR

... packs much hp. in little space



Designed to be placed in the airstream of the fan it drives, this motor ranges in horsepower from 1 to 15, but is a simple and compact totally enclosed unit. Since the motor is cooled by the fan it powers, the motor fan and guard are eliminated.

Windings in the cast iron motor are asbestos protected while ball bearings have Lubriflush transverse lubrication.

U. S. Electrical Motors, Inc.

... for more details, circle No. 207 on postcard

SHOOT THE WORKS

... with a light weight spray gun



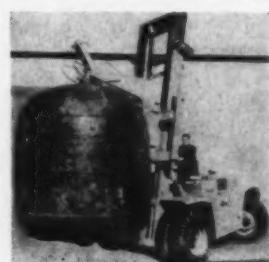
You can spray just about anything in the field of general maintenance with these light weight spray guns used with 1-hp. air compressors. They handle all types of paints and fast drying lacquers and will use an external mix nozzle set up so that fast drying materials can be sprayed without constant nozzle build up. Model 35, shown here, has a one knob adjustment to change from siphon to pressure cup feed and is the bleeder type.

Model 36 is the non-bleeder type, requiring a constant speed unload on the compressor. *Binks Mfg. Co.*

... for more details, circle No. 208 on postcard

BOOM ATTACHMENT

... for flowable solids containers



Designed to handle Seald-bin containers, this attachment mounts directly on the carriage of the G-3 series lift trucks. A hydraulic winch built into the attachment picks up collapsed containers from the ground or from a rail car or truck bed while a sway prevention bar prevents swinging in transit. *Yale & Towne Mfg. Co.*

... for more details, circle No. 209 on postcard

Hydraulics

ALL PRESSURE RANGES

This RODGERS 100-ton double-action platen press, installed at the H&L TOOTH COMPANY of Los Angeles, is hot-forming $\frac{3}{4}$ " alloy steel into buckets for excavating machines.

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PNEUMATIC RIVETER

... for high speed assembly



through a toggle linkage, they will operate off shop air from 60 to 150 psi. *Milford Rivet & Machine Co.*

... for more details, circle No. 210 on postcard

TURBOCHARGER

... makes a small diesel big



too: lower fuel consumption, cooler and cleaner engine and elimination of exhaust smoke. *AiResearch Industrial Div. Garrett Corp.*

... for more details, circle No. 211 on postcard

POWDER STUDGUN

... for all types of fastening



including the 5/16 in. unit. Compact and lightweight, the fastening tool has a safety guard that prevents firing unless the tool is in position and firmly pressed against the work surface. *Ammo Products, Inc.*

... for more details, circle No. 212 on postcard

CLOSED CIRCUIT TV

... puts your plant on camera



Mark III is for manual operation with one lens. Control unit is of modular construction; monitors are available in cabinet, rack mount and portable models ranging in screen size from 14 to 27 in. *Insul-8-Corp.*

... for more details, circle No. 213 on postcard

GETS AROUND . . . and STAYS AROUND



EFFICIENCY is the word for Hoz-Fas-Ners . . . and that is why production and maintenance men acclaim them for speeding assembly and cutting costs.

You can install a Hoz-Fas-Ner quicker . . . no screws to turn, no nuts to put on, no preassembly. Once installed, they never need adjustment or retightening.

Hoz-Fas-Ners are fabricated from the highest quality alloy spring steel, and resist rust. Because of the round contours of the sections, the clamps have no sharp edges to cut into hose—and they are usable on rubber, plastic or fabric.

Write for Engineering Bulletin No. 1



EATON

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MANUFACTURING COMPANY
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... for more details, circle No. 66 on Reader Service Postcard

FASTENING TOOL

... stops fastener dead in its tracks



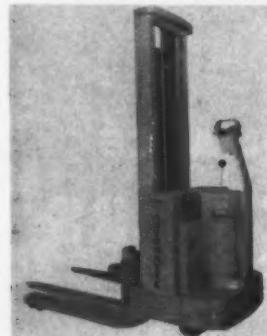
This powder-actuated fastening tool eliminates the danger of firing through a thin work surface by stopping any overdriven fastener in its tracks. The Flite-Chek is controlled by an assembly with tapered interceptor jaws which stop the fastener before it leaves the tool. When the fastener is stopped in this manner,

the operator simply pulls the tool off the work and is ready for another fastening. *Ramset Fastening System.*

... for more details, circle No. 214 on postcard

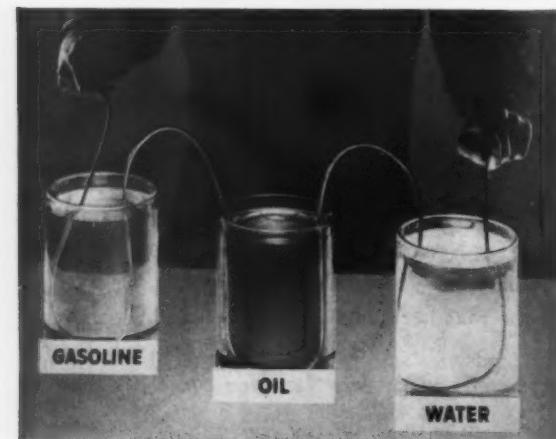
NEW POWERHEAD

... reduces stacker length



A newly designed powerhead is responsible for the reduction in length of this straddle walkie stacker. The latest addition to the Transporter line, this electric pallet truck reaches up to 130 in. with standard uprights of 83 in. It is available with either Mono or Duo masts in 4,000 and 6,000-lb. capacities. *Automatic Transportation Co.*

... for more details, circle No. 215 on postcard



NEW WIRE RESISTS ALL 3

This is Anaconda's new Dentrol wire—approved by Underwriters' Laboratories for direct exposure to gasoline and oil. Made with a clear nylon jacket overall, Dentrol affords new safety wherever wiring is exposed to gasoline or oil—new economy over lead-covered cable used up to now in these areas. Recommended for 600 volt wiring for lighting and control in and around refineries, tank farms, service stations, and industrial plants where TW wire may be used and is exposed to gasoline and oil. Write for full information to: Anaconda Wire & Cable Co., 25 Broadway, New York 4, N. Y.

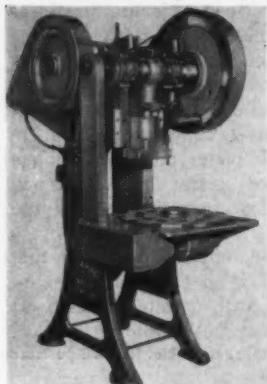
ANACONDA®

... for more details, circle No. 67 on Reader Service Postcard

84

DIAL FEED PRESS

... with timing chain-driven cam



A center-guided, silent automotive type timing chain drives the indexing cam on this dial feed press instead of the usual shaft and miter gears. The new design is said to provide 50% more work area for the operator and permit handling of new types of work.

Dial feed index rollers are cam followers, sealed for lifetime lubrication, while the cam housing is sealed with O rings to prevent oil leakage. Presses are available in eight sizes with capacities from 6 to 80 tons. *Federal Press Co.*

... for more details, circle No. 216 on postcard

PLASTIC METAL

... banishes maintenance bogies

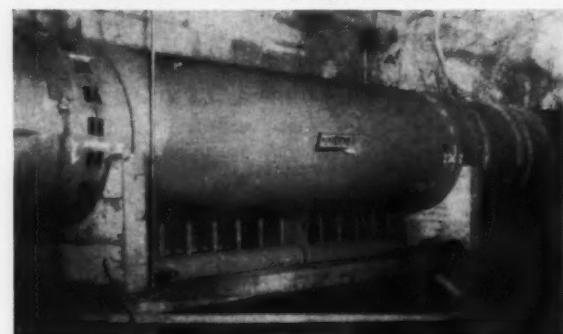


What's your maintenance problem? A leaking pipe? Broken model? Missing die? Or maybe your production line is at a standstill because an integral part has broken down. In all cases try plastic metal, a putty-like gene in a can that can be applied with an ordinary putty knife or spatula to just about anything. It will bond metals, woods, plastics and glass or pour to make models and patterns, solidifying in about half an hour at normal room temperature. *A. L. Okun Co.*

... for more details, circle No. 217 on postcard

DUST COLLECTOR

... designed for mining operations



The Microdyne, a wet inertial type dust collector which fits directly into existing duct work, has passed its metal mining field tests with flying colors (not dust). The compact and adaptable unit for providing dust-free air underground is easy to maintain and will generally operate on existing water systems. Draft loss is low, resulting in a power saving at the fan, while construction of the collector is such that each part is readily accessible for maintenance. The unit is applicable in all types of mining, for stopping of different kinds, and for block caving. *Jov Mfg. Co.*

... for more details, circle No. 218 on postcard

LIFT TRUCK

... with redesigned steering assembly

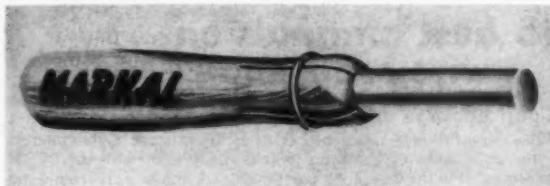


... for more details, circle No. 219 on postcard

PAINTSTIK

... makes a sure mark

You'll never miss your mark after heat treating and annealing if you use the M-10 Paintstik whose marks on

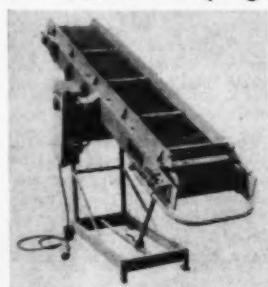


any metal withstand temperatures as high as 2,400 deg. F. Surfaces are marked while cold with Paintstik, which contains no lead, zinc or copper pigments. Marks can be removed with a pickling bath. *Markal Co.*

... for more details, circle No. 220 on postcard

HEAVY-DUTY HUSTLER

... hurries stampings between presses

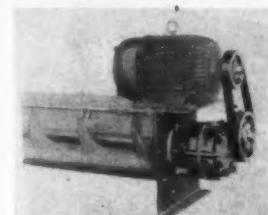


up to 45 deg. from the horizontal. The electric powered portable unit comes in many widths and lengths also. *May-Fran Engineering, Inc.*

... for more details, circle No. 221 on postcard

SCREW DRIVE

... for standard conveyor troughs



Simple to mount and adjust on standard conveyor troughs, this screw conveyor drive comprises a speed reducer with packing gland and driving shaft which mounts on the trough end. The drive is designed so that material handled by the screw conveyor cannot invade the speed reducer and the packing gland is adjustable from the outside, takes standard packing and can be inspected by sight. *Dodge Mfg. Corp.*

... for more details, circle No. 222 on postcard

MATCHED to your needs

SURETY INDUSTRIAL GLOVES



PROVED more wear per pair



Just the right gloves, for the jobs to which you subject hands, are as important as the right production machinery. By supplying gloves with proper hand comfort and assured safety you improve valuable workers' satisfaction.

Natural Rubber, Neoprene, Sureseal (HYCAR), Vinyl and all types of Coated . . .

Surety makes many regular and special types of gloves for most requirements and can supply accurate information as to wearing qualities and resistance that will help you select the right gloves for your jobs and control glove costs. Send for a Surety catalog.

THE **SURETY** RUBBER CO. CARROLLTON, OHIO

Western Sales Representative:
The Macintosh Co., 3030 Bridgeway, Sausalito, Calif.
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GAR-BRO WHEELS FOR ALL INDUSTRIAL APPLICATIONS



26
TYPES & SIZES

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EQUIPMENT
ENGINEERING SERVICE

WHEEL TYPES: Drop Center, Lug Base, Disc, Demountable.

WHEEL DIAMETERS: 21", 20", 18", 17", 16", 15", 12", 10", 8", 6".

BEARINGS: Tapered roller, straight roller or ball.
TIRES: Pneumatic or cushion—all standard sizes.

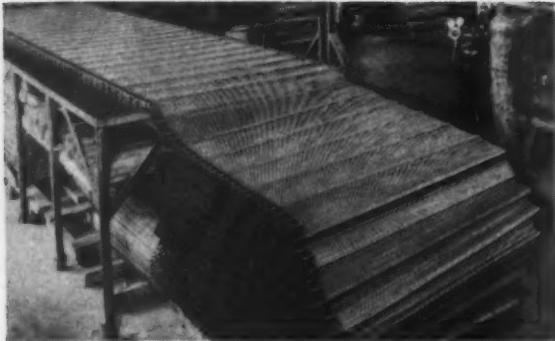
Available with or without tires.
Write for catalog.

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Division of Garlinghouse Bros.
2415 E. Washington Blvd., Los Angeles 21, Calif.

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LET YOUR PRODUCTS
... travel the custom way



Whatever your product or material, it can ride on a metal conveyor belt designed specifically for it. These woven wire belts in their infinite variety are adaptable for any industrial purpose from food canning to glass annealing. They withstand temperature extremes, caustic elements, liquid baths and practically anything else. You may have the belts in basic weaves, such as balanced, sectional, rod-reinforced or conventional, or any style you need in limitless size and wire gage varieties. *Alloy Wire Belt Co.*

... for more details, circle No. 223 on postcard

VACUUM MACHINE

... for a wide, clean sweep

A powerful vacuum system which forces dust-laden air through a 540-sq. ft. dust filter system makes this power sweeper with a 7 ft. 4-in. path a real boon for cleaning large areas—yards, parking lots, cement plants, etc. In spite of its size, the sweeper is highly maneuverable, with



a turning radius of 9 ft. 2 in. A main broom and two gutter brooms collect debris and discharge it into a hydraulically dumped dirt hopper. *G. H. Tennant Co.*

... for more details, circle No. 224 on postcard

15 best manuals on wire rope, slings

4-part package on handling wire rope

It's doubtful that the denizens of Pompeii gave much thought to the techniques of handling their $\frac{3}{8}$ -in. bronze wire rope 2,500 years ago. But the handling has developed into a near-science today. And here are four brochures that tell you how: 30 pages on rigging, splicing and socketting; four pages on equalizing, or breaking in, wire rope; four pages on specifying the right rope for slings, and finally a 30-page book packed with engineering data. *Pacific Wire Rope Co.*

... for your copy, circle No. 225 on postcard

From drawing board to your back door

This fascinating 56-page book gives you the complete behind-the-scenes story of wire rope from its conception on the drawing board to the finished product. Shown are lab testing, the trip from coil to spool, stranding, closing, different lays and lubrication. Four pages picture cross-section patterns of 60 different ropes. The final 20 pages contain wire rope tables. *Wire Rope Corp. of America, Inc.*

... for your copy, circle No. 226 on postcard

Brief course in rope-ology

The first lesson in this two-point course, "Slings for Industry," teaches you about slings with strengths from 1,000 lb. to 243 tons with pictures, drawings, and charts. The second lesson is on pre-fabricated wire rope assemblies—what they are, what they're made of and their applications. Included is a list of specialty catalogs on wire rope available to anyone interested in a particular use. *Macwhitie Co.*

... for your copy, circle No. 227 on postcard

Getting to know the ropes

These 75 pages are a combination of proven engineering recommendations, practical usages and concise catalog data on wire rope and slings. If you want dimensions, capacities or a look-see at a special rope for a special use get these two spiral bound, illustrated and indexed volumes. *John A. Roebling's Sons Corp.*

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VESSELS**

**to meet specialized
plant and
equipment
requirements**

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trouble and money by
contacting Puget Sound—
a versatile, "on the spot"
custom source with over 56
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fabrication of steel plate
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Craftsmen in steel plate and alloys up to 1"

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86

✓ check
the many advantages of

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WESTERN INDUSTRY — March 1958

Where to use gripper woven slings

These picture application books will rope you into using gripper woven wire slings for applications you've never thought of. And you'll be glad, after you've read about the different types available for handling bantamweights or brutes. Engineering data and prices are included. *Cambridge Wire Cloth Co.*

... for your copy, circle No. 229 on postcard

How to select the right wire rope

This eight-page leaflet, just published, elaborates the factors you should consider in selecting wire rope—strength and safety, stretch, lubrication, unreeling, lays and materials. Construction features of more than 15 types are pictured while physical properties are given in chart form. *Hackensack Cable Corp.*

... for your copy, circle No. 230 on postcard

Wire rope applications at a glance

This 24-page photograph album alphabetizes crane, conveyor, dredge, railroad, mill and blast furnace and miscellaneous uses for rope and cable. Pertinent data are briefed while the real story is told in the pictures. *American Chain & Cable Co., Inc.*

... for your copy, circle No. 231 on postcard

How-to-do-it sling chain handbook

Learn how to care for, use and inspect sling chains in this 32-page brochure, well illustrated with pictures and diagrams. The handbook also offers charts and tables for standard and special styles and attachments, with sizes, weights and working load limits. *Columbus McKinnon Chain Corp.*

... for your copy, circle No. 232 on postcard

Kit on wire rope for material handling

The half dozen sheets in this folder will brief you on wire rope for every material handling need. For example, you'll see in diagram form the advantages of Mazzella slings, the difference between the old and the new in boom pendant assemblies, applications for Safety-Splice slings and earth moving problems solved with scraper cable, to mention a few. *Wire Rope Corp. of America.*

... for your copy, circle No. 233 on postcard

Longevity for your wire rope

This 80-page manual should be in the hands of everyone who uses wire rope. "Know Your Ropes" is a practical guide to selection, application and usage packed with practical information and written in every day terms. A table of contents and an index lead you quickly to any pertinent topic: bending fatigue, cutting, distortion, rope connections, elasticity, heat deterioration and 101 other facts you'll want to know. *Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp.*

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Three-part package on sling features

Kinks won't make you cranky if you use Cable-Laid wire rope slings described in a four pager as having the strength of steel, the flexibility of hemp and a kink-free construction. Find out the plus values of sling chains and general use sling in two other four-pagers, both well illustrated. *American Chain & Cable Co., Inc.*

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Four quickies on wire rope slings

Maxiflex, Multiflex and Uniflex slings are briefed in three identical leaflets showing typical applications, standard types and a table to help you pick out the correct sling for your needs. A more complete four pager digests Duragrip slings, their construction, dimensions and capacities. *Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp.*

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Characteristics of 50 common slings

Get a load of these slings—and most common fittings as well—in an 80-page book on characteristics and components. Each sling, including the special Mazzellas, is illustrated. Book rounds out with construction, capacity and dimension data in chart form. *Wire Rope Corp. of America, Inc.*

... for your copy, circle No. 237 on postcard

From "abrasion" to "Wisscolay" in 180 pages

Lasso this 180-page volume for an all-encompassing guide to wire rope. If it's pertinent, it's here: basic data like characteristics, loads, safety factors, construction; typical applications like mining, contracting, drilling, logging, fishing, and passenger and freight elevating; the complete care, handling and splicing of wire rope and a host of useful charts. Indexed and completely illustrated. *Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp.*

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120-page bible on wire slings

If it's facts on wire rope slings you want, get a line on this 120-page spiral book with its standard practice data, rated capacities, measuring know-how and ordering info for four classes of slings. Indexed, illustrated and designed for quick and easy reference. *Wickwire Spencer Steel Div., Colorado Fuel & Iron Corp.*

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before repainting

Oakite Rustripper saves time in paint shops by doing *complete* stripping in one operation. Eliminates extra pickling (and neutralizing) to remove metallic pigments, phosphate coatings and rust that prevent successful repainting.

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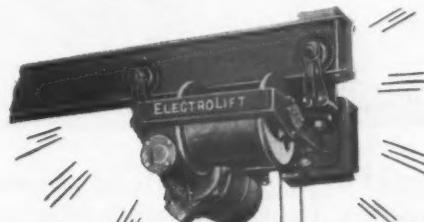
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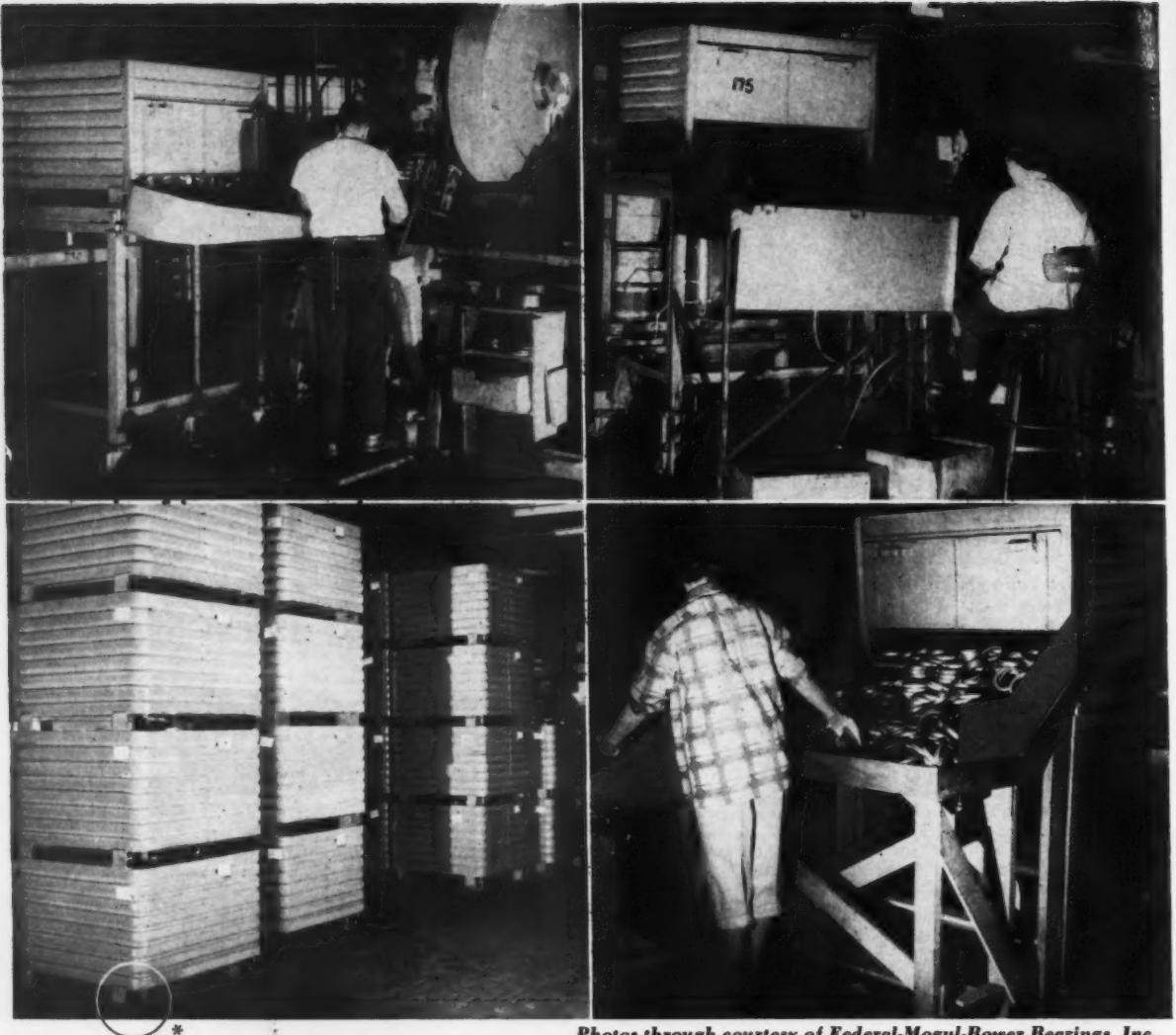
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... for more details, circle No. 73 on Reader Service Postcard

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Photos through courtesy of Federal-Mogul-Bower Bearings, Inc.

Powell Dual-Purpose Flow-Matic® System steps up production and reduces maintenance for the Redwood City, Calif. plant of National Seal Division of Federal-Mogul-Bower Bearings, Inc., while going through major changeover.

Powell developed a special Flow-matic® box to meet unusual interim circumstances at National. Because National ultimately desired a complete Flow-matic® system, yet had to have the new system interchange with the old during conversion, Powell engineers developed a special foot and corner bracing to enable Flow-matic® units to interchange with those of the older style (*note circle above). The conversion program is still going on, and without a hitch.

Here's another example of Powell material handling know-how and the versatility of their great new Flow-matic® system, proved the finest method yet devised for volume handling.

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WESTERN INDUSTRY — March 1958

The Industrial West

ON ITS WAY

plants

production

distribution

personnel

Bralco Metals Adds Los Angeles Warehouse

LOS ANGELES—Slated for completion this month is an 11,000-sq. ft. warehouse being built by Bralco Metals, Inc., 6489 Corvette St. to take care of the firm's increasing sales volume of brass, aluminum and copper in this area.

The expansion move involves expenditure of more than \$180,000 in new equipment and buildings, according to Claude N. Cohn, president.

A reinforced concrete tilt-up structure which is completely sprinklered, the new warehouse will provide more space for Bralco's fabricating operations and increased inventories. The additional warehouse area will be covered by a five-ton double girder crane.

Bralco recently installed a McKay 4-Hi roller leveler, which will level aluminum sheets up to 60 in. wide, and cut them to virtually any required length.

Green-Penny Move Increases Space 100%

LOS ANGELES—An expansion move that gives the Green-Penny Co. a 100% increase in office and warehouse space was marked by a two-day open house the firm held recently in its new 28,000-sq. ft. building at 4180 East Noakes St. This is the company's fourth expansion since its inception in 1944.

Situated on a 1½-acre plot, with room for later expansion, the building is equipped with latest conveniences for warehousing and shipping of industrial shelving and miscellaneous shop equipment. On display at the open house were shelving, lockers and cabinets, plus the Sturdibilt line of steel storage racks. Representatives of Green-Penny's engineering department were on hand to give advice on plant layout.

The one-story tilt-up slab building has a two-car railroad siding and hydraulic loading ramps on two of its shipping doors.

President of the firm is T. M. Penny, and director of sales, Elmer Green. Manager of the Oakland branch office and warehouse, opened in 1954, is Gordon Lee.

L.O.F. Glass Fibers Co. Begins Construction of \$1,000,000 Plant

CORONA, CALIF.—Second West Coast manufacturing facility for L. O. F. Glass Fibers Co. is a \$1,000,000 plant begun here in recent weeks.

Scheduled for August 1 completion, the 105,000-sq. ft. plant will be devoted to manufacture, fabrication and warehousing of the firm's complete line of insulation products, including newly-introduced pipe insulation. Expected employment will be about 300 persons.

Being erected by the glass fiber industry's second largest manufacturer, it is the latest step in Western activity for L. O. F., which in 1952 began operations at its Burbank, Calif., plant, fabricating specialized insulation products for the aircraft industry.

On completion of the new facility, fabricating work now done at Burbank will be moved to Corona, providing a consolidated operation, company officials said.

The firm's entire Western operation, manufacturing and sales, is under direction of John A. Morgan, vice president and general manager of the Pacific Coast division.

Lewis-Shepard Expansion Means Faster Service for West

SAN FRANCISCO—Western distributors of Lewis-Shepard material handling products are to get faster delivery of electric fork lift trucks and related equipment following recent expansion of the L-S plant in Watertown, Mass.

The company officials have announced it has added 75,000 sq. ft. to its production facilities, giving a total area of 300,000 sq. ft., for manufacturing fork lifts, high-lift walkie-type trucks and hand and electro-hydraulic stacking equipment.

Lewis-Shepard has representatives here and in Phoenix, Tucson, Denver, Salt Lake City, Los Angeles, Portland and Seattle.

Sunstrand Purchases AMF Turbo Division

DENVER—Sunstrand Machine Tool Co. has purchased the Turbo Division of American Machine and Foundry Co. and will integrate it with the Sunstrand aircraft component plant here.

Operations for the Turbo Division, which develops and designs accessory power supplies for missiles, will continue at Pacoima, near Los Angeles, where about 550 persons are employed.

Products developed there will be manufactured at Sunstrand's Denver plant, which employs some 1,100 persons.

Kennecott Purchases Consolidated Properties

ELY, NEV.—Kennecott Copper Corp. announces the purchase of Consolidated Coppermines Corp. properties in White Pine County.

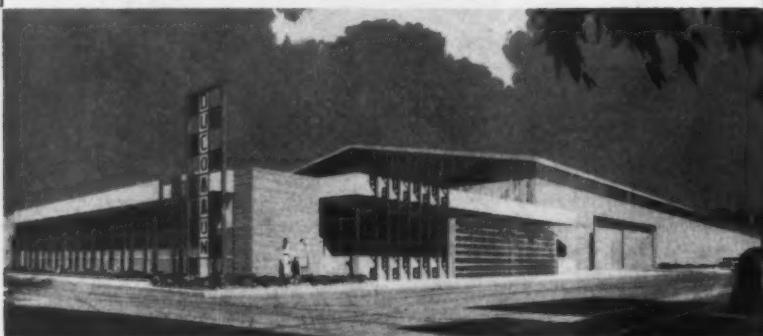
Sales includes Consolidated Coppermines Tripp Pit, its contiguous holding in Kennecott's adjacent Liberty and Veterans Pits, numerous mining claims, water rights, surface buildings, equipment, the company-owned community of Kimberly, and other real estate.

Involved in the transaction were only the White Pine County properties, with Coppermines still retaining its other interests.

An experimental rod mill is currently being installed at the Arthur or concentrating mill of the Utah Copper Division of Kennecott Copper Corp.

The mill, which utilizes steel rods instead of iron balls to grind ore, will undergo tests soon. It will be housed in a separate building.

Service Center for Arizona, New Mexico Opened by Ducommun Metals in Phoenix



THIS 67,000-SQ. FT. facility represents Ducommun's latest step in establishing a complete service center system in the West.

PHOENIX—Ducommun Metals & Supply Co., pioneer Western distributor of metals and industrial products, took a major step in its program to establish a complete service center system in the West when it opened its new Arizona plant in February.

The 67,000-sq. ft. facility at 301 S. 26th St., replaces the firm's smaller plant established in 1953. Land, buildings and equipment for the Phoenix project represent an investment of some \$700,000.

Designed to provide a complete service center for growing industry in Arizona and New Mexico, the new plant has 63,000 sq. ft. of warehousing space, plus an additional office area.

The building features improved plant layout and handling equipment so that Ducommun can maintain extensive stocks of alloy, carbon and stainless steel and other metals; production items, such as bolts, screws, fittings and valves; tools of all kinds, and a wide range of items such as drills, cutting and threading devices, and abrasives.

New equipment at the plant will permit special services such as surface grinding and precision torch cutting and shearing of sheet and heavy plate.

Manager of the Arizona division is Royal N. Thayer, who succeeds Chester C. Cooper, presently advisory manager until his retirement May 1 after 38 years with the firm. Billy G. Nelson, sales manager, and Edwin F. Egerer, merchandising and service manager, will assist Thayer.

In addition to Ducommun's main Los Angeles plant, there are plants in San Diego and in Berkeley, Calif., and sales offices in Tucson, Salt Lake City, Fresno, and Bakersfield.

F. Somers Peterson Represents Hein-Werner

SAN FRANCISCO—Appointment of the F. Somers Peterson Co. as a representative for the Hein-Werner Corp. line of hydraulic pumps, valves and motors for industrial and mobile use, was announced recently.

The distributor company will handle products of the Waukesha, Wis., firm exclusively in California, Oregon, Washington, Idaho, Nevada and Arizona.

Stocks will be maintained in the two Peterson warehouses at 157 13th St., San Francisco, and 3000 S. Broadway, Los Angeles, for service of hydraulic equipment distributors and original equipment manufacturers in the six-state area.

\$3 Million Plant Completed by Norris Thermador

LOS ANGELES—Now in full production is the \$3,000,000 Vernon plant which Norris-Thermador Corp. completed recently. Partial production at the 92,000-sq. ft. facility began in November.

A manufacturer of automobile wheels, Norris-Thermador supplies practically all West coast assembly plants of major automobile manufacturers. The new facility features highly mechanized equipment for steel processing and for other production phases, as well as for material handling.

West Claims Largest Industrial Tract

ANTELOPE VALLEY, CALIF.—The largest industrial tract in the United States—some 16,080 acres—was dedicated here recently.

The area is located between Palmdale and Lancaster and encircles U. S. Air Force Plant No. 42, which is already the site for extensive installations of Lockheed, North American, Northrop and Convair aircraft companies.

Robbins Aviation Moves to Larger LA Quarters

LOS ANGELES—Now in larger quarters at 2350 E. 39th St. is Robbins Aviation, Inc., which moved in February from 1735 W. Florence Ave. The company specializes in many types of valves ranging from high vacuum to high pressure, and high pressure RAF dehydration equipment—products used extensively in the missile, rocket, aircraft and industrial fields.

SIPMHE Establishes Ethical Conduct Code

Currently under discussion at chapter meetings of the more than 2,000 members of SIPMHE coast to coast is the first canon of ethics for guiding professional engineers in the field of packaging and material handling.

Heralded as a "definite indication that the profession has come of age," the 18-section code was recently approved by the constitution and by-laws committee of the Society of Industrial Packaging

• and Materials Handling Engineers, after previous approval by the SIPMHE board of directors. It is being submitted for ratification by chapters as the organization's code.

The document covers "Professional Life," "Relations with the Public" and "Relations with Clients and Employers," calling upon those covered by it to adhere closely to ethical personal and professional conduct.

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WESTERN INDUSTRY — March 1958

PG & E to Build Plant for Producing Atomic Power Economically

SAN FRANCISCO—A significant step toward the time when nuclear electricity will be economically feasible was announced recently by Pacific Gas & Electric Co., one of the industry leaders in atomic power research and development.

The development—which appears to have broken the cost barrier to commercial atomic-electric power—was also announced in Washington before the Joint Congressional Committee on Atomic Energy, by *Adm. Lewis L. Strauss*, AEC chairman, who said that PG&E is prepared to support its findings by building a 60,000-kw. atomic power plant at Humboldt Bay south of Eureka, Calif. The plant is to be in service by the middle of 1962.

Norman R. Sutherland, PG&E president, attributes the company's belief it has broken the economic barrier to (1) advances in the design and technology of the boiling water reactor, based on knowledge gained in the successful operation of the General Electric-PG&E atomic power plant at Vallecitos, and (2) favorable factors at the proposed Humboldt location.

8 mills per kilowatt hour

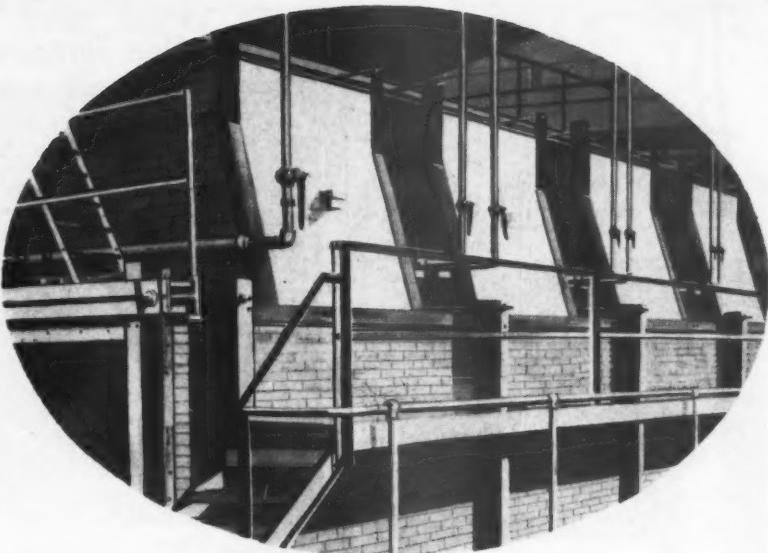
These two elements combine to achieve competitive power costing 8 mills per kilowatt hour, said Sutherland, explaining that the 8-mill goal should be reached with the second core of uranium fuel in the proposed new plant.

Sutherland also said that his firm has completed negotiations on a regular commercial basis with Bechtel Corporation to design and build the plant, with General Electric to supply nuclear and electrical equipment, as in the Vallecitos project near Pleasanton, which last October began producing the world's first all-privately financed atomic-electric power.

Philadelphia Gear Completes Sales, Service Facility

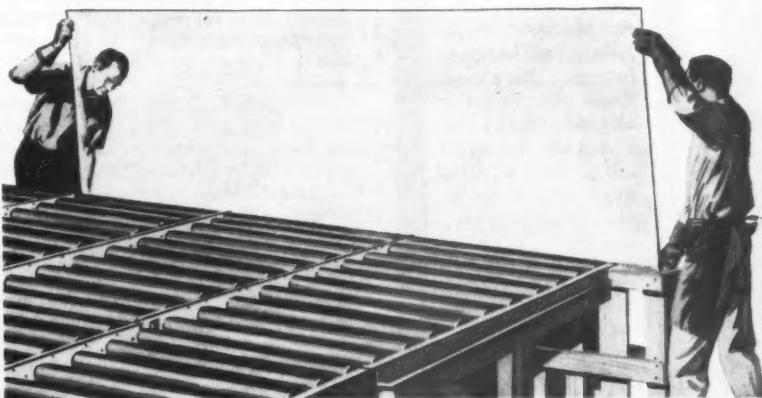
GARDENA, CALIF.—Philadelphia Gear Works has recently completed a new 6,000-sq.ft. sales and service facility for their complete line of couplings, speed reducers, agitators, gear motors and Limitorque valve controls. The new facility includes warehouse space for a complete stock of spare parts for all equipment manufactured by Philadelphia Gear.

Thomas F. Hayes has been appointed Western division manager for Philadelphia Gear. His offices will be at 507 E. Olive, Gardena. *Robert Burkoe* has been appointed service manager for the new facility.



Essential tool of the glass industry...

The glass furnace fuses such raw material as silica, alkali and lime into glass for home and industry.



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Such are the facilities of California Bank,
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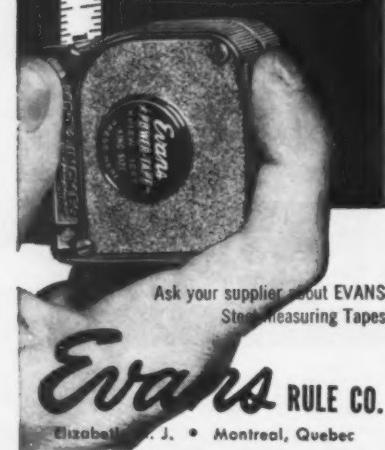
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92

New Furnaces for Calstrip Steel



INSTALLED RECENTLY AT Calstrip Steel Corp., Los Angeles, are these Lee Wilson annealing furnaces. Operated with the finest types of controlled atmosphere and electronic controls, the furnaces give Calstrip an outstanding annealing practice. With the new equipment, top quality high carbon spring steel and low carbon cold rolled strip are assured.

Hazeltine to Represent Keystone, A. O. Smith Lines

PORLAND—J. E. Hazeltine Co., 115 S.W. Second Ave., industrial and mill-supply distributor, announces its appointment to the representation of two new product lines.

The more than 200 types and grades of industrial lubricants manufactured by Keystone Lubricating Co., Philadelphia, will be handled by the Hazeltine organization in its sales coverage of Oregon and southwestern Washington, out of Portland. Other Washington areas will be served through the firm's Spokane and Seattle branches, but Keystone stocks will be maintained only in the Portland and Spokane locations.

The complete line of A. O. Smith Corp. welding machines and electrodes has also been taken on by the Hazeltine company and will be sold and serviced through the company's Portland, Seattle and Spokane establishments.

This line, according to Glenn E. Wil-

son, Hazeltine assistant general manager, replaces a similar GE line which was dropped when GE withdrew from the welding machine business.

New Van Nuys Apparatus Office for Westinghouse

VAN NUYS, CALIF.—To provide better service for Westinghouse apparatus customers in northwest Los Angeles County and three neighboring counties, Westinghouse Electric Corp. last month established a new apparatus sales office at 15217 Burbank Blvd.

Manager is Arthur G. Kane, Jr., who, with his staff, will provide sales, engineering and service facilities for electrical, mechanical and steam apparatus. The area the unit will serve is bounded on the north by Bakersfield and on the south by Playa Del Rey, including all of Ventura, Santa Barbara and Kern counties.

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...for more details, circle No. 78

American MonoRail Appointed by Sage

LOS ANGELES—The American MonoRail Co. announces it has been appointed Los Angeles area distributor for Sage Equipment Co., Buffalo, N. Y., manufacturer of conveyors. The district sales office is located at 2310 N. Alameda St., Compton.

Sales engineer for the Sage products will be W. "Bill" M. Kelly, who was formerly with the Landahl Conveyor Division of American MonoRail in Cleveland. He will handle the complete line of Sage gravity wheel, roller and power driven conveyors.

Clark Equipment Buys Brown Trailers, Inc.

SPOKANE, WASH.—Purchase of Brown Trailers, Inc., E. 6328 Utah, by Clark Equipment Co. material handling equipment manufacturer of Buchanan, Mich., was announced recently by the two firms.

Brown, which manufactures aluminum trailers and cargo van bodies, has general offices and a plant here as well as plants in Denver, in Reading, Pa., and Elgin, Ill.

According to George Spatta, Clark president, the purchase represents a further extension of Clark's activities in the material handling field, where the firm is a major producer of fork lift trucks, straddle carriers, tractors, construction machinery and heavy-duty drive components for the automotive industry.

Brown's current sales volume is about \$13,000,000. Clark's net sales for 1957 were about \$147,000,000.

Pennsalt Plans to Make Chemical for Rocket Fuel

PORLAND—Plans have been disclosed by Pennsalt Chemicals Corp. to build a plant for producing ammonium perchlorate, a compound which can be used in solid missile propellants. The facility is being built adjacent to Pennsalt's Portland plant which makes sodium chloride, a raw material used in the ammonium compound.

Darcoid Named Distributor for Rustoleum Line

SAN FRANCISCO—The Darcoid Company of California, 234 Ninth St., was recently appointed Northern California distributor for products of Rustoleum Corp., of Evanston, Ill., according to Erie O. Spencer, president. Darcoid will handle a complete line of industrial rust preventives and is in the process of appointing dealers for the line.

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... for more details, circle No. 79
WESTERN INDUSTRY — March 1958

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... for more details, circle No. 80 on Reader Service Postcard

Not-Seeing is Believing



A REALISTIC LOOK into the world of the blind was given delegates to the 12th Annual Management-Labor Safety Conference for the California pulp and paper industry in San Francisco recently. The blind-folded safety men were asked to attempt several common manual functions in a demonstration designed to point up the importance of protecting the eyes. Normally well-coordinated delegates became almost hopelessly clumsy while trying to light cigarettes, tie shoe-laces and do other simple tasks without their eye-sight. Over 150 members of the Pacific Coast Association of Pulp and Paper Manufacturers attended the two-day conference at which Judge William J. McGuinness, of Oakland was the keynote speaker.

Fluorescent Fixtures Adds to Bay Area Plant

SOUTH SAN FRANCISCO—Scheduled for completion this spring is an expansion of the main plant of Fluorescent Fixtures of California, 352 Shaw Road. Manufacturing and storage facilities in the existing plant are now 110,000 sq. ft., and the new building will bring this up to 130,000.

Fixtures designed and fabricated by the firm for industrial and other applications are marketed under the "All-Brite" trade name, with distribution

through electrical dealer firms. Branch plants are maintained in Los Angeles, Portland, and Vancouver, B. C.

President of Fluorescent Fixtures is E. O. Anders, and vice president is C. D. Buchanan, who is in charge of sales and distribution.

Kay-Brunner Expansion

ALHAMBRA, CALIF.—Under construction by Kay-Brunner Steel Products, Inc., is a 40-ft. extension to the foundry cleaning room. The 4,800-sq. ft. addition will increase the firm's heat treating and annealing facilities.

*Accoustica Associates Opens Western Facility

CULVER CITY, CALIF.—Start of Western operations for Accoustica Associates of Mineola, L. I., was marked by a plant tour and demonstration of ultrasonic devices recently in the firm's new manufacturing and research facility at 11601 N. Jefferson Blvd.

James D. McLean, a director of West Coast Electronic Manufacturers' Association and president of Hoffman Laboratories, was on hand to welcome Accoustica's president, Robert L. Rod, who revealed future plans of the company and applications for ultrasonic devices within Western industry.

Green-Penny Named Distributor for Bond

LOS ANGELES—A recently appointed distributor of Bond truck casters here is the Green-Penny Co., according to an announcement by Bond Foundry and Machine Co. of Manheim, Pa. Designated as a warehousing distributor, Green-Penny is located at 4180 E. Noakes St.

Osborn's Sharon Division Bought by Allied Paper

SUNNYVALE, CALIF.—Sharon Division of Osborn Paper Co. was purchased recently by Allied Paper Corp., Chicago, which last year acquired Mercury Envelope Co. of San Jose. The Sharon division occupies a 125,000-sq. ft. plant at 1242 Kifer Road, Sunnyvale.

Building Maintenance Firm Opens Tucson Branch

TUCSON, ARIZ.—American Building Maintenance Co. has announced opening of a new branch here, a move that marks the firm's entrance into its 40th major city in this country and Canada.

Max L. Allison, formerly with ABM's Phoenix office, will be manager. Principal headquarters of the firm are in San Francisco.

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Y**

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Trade Show Visitors Look for Cost-Cutting Ideas, Says M-H Executive

SAN FRANCISCO—How Western manufacturers in search of new methods for cutting production costs will welcome the 1958 Western Packaging and Materials Handling Exposition to be held here Aug. 11-13 was outlined in a recent statement by O. L. Jenkins, president of E. C. Buehrer Associates, Inc., Oakland.

"It's logical to look for cuts in the packaging and materials handling fields," Jenkins said, "for they take the biggest monetary slice out of the overall production cake."

"Innovations in these fields are being introduced constantly and there are reports of many new methods that will result in tremendous reduction in costs, yet lead to no loss in efficiency. In fact, new methods will pay for themselves in savings in space, time and labor, while actually helping to increase the rate of production," he stated.

The material handling executive went on to cite several instances in which Western manufacturers had profited by the Exposition held in Los Angeles two years ago.

"It's obvious," Jenkins continued, "that many new methods and systems of packaging and materials have been perfected since that show two years ago, and the announcement of the 1958 Western Packaging and Material Handling Exposition in San Francisco has created tremendous interest among plant operators and equipment buyers in the 11 Western states.

"Industry in the West is looking forward to this show where they will have an opportunity to see hundreds of improvements in these related fields of handling, where they will learn new methods that will save them money, and where they will solve their problems of packaging and handling materials in an ever-growing competitive market," Jenkins concluded.

Chemical Process Co. Expands Facilities

REDWOOD CITY, CALIF.—Completion of construction on expanded facilities at its plant here has been announced by the Chemical Process Co., manufacturer of DION resinous adhesives.

These adhesives, used in production of plywood and other forest products, were introduced early last year, culminating five years of research in the company's laboratories.

The firm's adhesives division was established in 1956, with a sales office, service department and field office in Tacoma, Wash., to serve the plywood industry in the Pacific Northwest.

Ling Units in Los Angeles, Dallas Announce Merger

LOS ANGELES—Ling Electronics, Inc., of Los Angeles and Ling Industries, Inc., of Dallas have announced a merger in which Ling Electronics will be the surviving corporation. The company will operate three subsidiaries in Dallas and Grady-Ling Electric, Electronic Wire and Cable, and American Microwave, all in Los Angeles.

Robert Dodd Co. Named to Handle Three Lines

PORTLAND—The Robert Dodd Co., 5210 S.W. Corbett Ave., has recently been appointed to represent two lines of pneumatic-tired mobile cranes as well as Disowheel, a wheel for industrial trucks.

One crane line is the Bull Moose, made by Todd Shipyard Corp., Seattle, and available in five, eight and 10-ton capacities. Second line is the Roustabout, a product of Hughes-Keenan Corp., Delaware, Ohio. This is a slew-boom type crane that comes in both mechanical and hydraulic models in various capacities up to 12 tons.

Disowheel, manufactured by Disogrin Industries of Mount Vernon, N. Y., is composed of polyurethane elastomer and is a roller type wheel for use on many kinds of industrial trucks.

Saginaw Opens Western Office for M-H Products

CULVER CITY, CALIF.—Saginaw Products Corp., Saginaw, Mich., manufacturer of material handling equipment, has opened an office at 5333 Sepulveda Blvd. Joseph U. Lademan, formerly with the W. H. Delmar Co., is district manager.

Saginaw Products has for 37 years specialized in the manufacture of conveyors, casters, leveling jacks, undercarriages and accessories for military and industrial trailers, material handling and warehouse trailer trucks, and pneumatic and industrial wheels.

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Pacific Clay Products Buys Refractories Firm

LOS ANGELES—To broaden its clay industry activities and enter the refractory materials field, Pacific Clay Products recently purchased Western Refractories Co., Ione, Calif. The transaction includes a 55-acre plant site, plus 650 acres of clay bearing land and leases acquired from the Gladding Co.

The refractories firm, located within 30 miles of both Pacific Clay's Camanche silica sand plant and its Stockton vitrified clay products plant, mines, produces and delivers a wide range of refractory materials as well as high temperature products to customers' requirements. It also produces high temperature bonding mortars and ground materials used in many industries. Facilities at Western Refractories' 160,000-sq. ft. plant include a continuous tunnel kiln with dryer, a rotary kiln and five periodic kilns.

Division Office Established

By C.I.T. in Denver

DENVER—Announcement that it has opened a new division office here was made recently by C. I. T. Corporation, the nation's largest industrial financing firm. Growing industrial activity in the Colorado, New Mexico and Wyoming areas was given as the reason for the new office. Paul F. Franklin, who has been elected vice president, and Claude S. Allcut, assistant secretary, will handle the Denver operation.

Santa Barbara Plastics Bought by Narmco Co.

SANTA BARBARA, CALIF.—Narmco Adhesives & Plastics Co. of Costa Mesa, Calif., has announced its purchase of Santa Barbara Plastics, a developer and manufacturer of vinyl-coated plastics for aircraft, industrial and agricultural end uses.

It will be operated as a subsidiary,

under general management supervision of Narmco Resins & Coatings Co., another subsidiary of the Narmco parent firm. M. Scott Moulton, Santa Barbara Plastics president, will be manager of the new subsidiary.

The acquisition, described as a further step in Narmco's planned product diversification program, will improve the firm's production depth.

Portco Establishes Seattle Sales Office

SEATTLE—Establishment of a sales office here at 444 Dexter Horton Building has been announced by Portco Corp., Vancouver, Wash., producer of custom-engineered packaging of paper and plastic, specialty twines, and plastic pipe.

The operation will be headed by Robert L. Burnside, sales representative for Washington, British Columbia, Idaho, Montana and eastern Oregon. He will work under Robert Bjordstrom, Portco's paper and plastic division manager, and will coordinate the work of jobbers and distributors in the Pacific Northwest.

Burnside was formerly Seattle sales representative for Southland Paper Converting Division of Fortifibre Co., Los Angeles.

A.O. Smith Establishes

Western Aeronautical Unit

ANAHEIM, CALIF.—Establishment of a Western division here for manufacture of aeronautical parts has been announced by A. O. Smith Corp., Milwaukee, Wis., manufacturer of diverse industrial and automotive products. The new unit, under direction of Arnold H. Prosser, manager, is housed in a leased plant with some 30,000 sq. ft. of manufacturing space.

Flamort Chemical Named to Handle Firehold Line

SAN FRANCISCO—Appointed recently as exclusive representative in the West for Firehold, fire retardant paint, was Flamort Chemical Co., 746 Natoma St. Flamort will establish dealers' franchises in the 11 Western states for the line, which is made by Elliot Co., Inc., of Brooklyn.

Flamort also manufactures fire retardant chemicals for treating wood, paper, textiles, etc., and the new paints will provide the firm with a complete selection of interior and exterior surface retardants.

Schwartzman Products

NORTH HOLLYWOOD, CALIF.—J. Schwartzman Manufacturing and Supply Co. announces it is currently manufacturing J. S. fin shank speaker bolts at its 7040 Laurel Canyon Blvd. plant. The bolts, used for mounting radio speakers in cabinets, are made in standard sizes and to individual specifications.

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Research Lab Cures Maintenance Ills

OAKLAND—Danger signs in engine health are being spotted quickly these days and, as in prompt diagnosis of human malfunctions, it pays off in keeping the machines in top condition.

The check-ups, which put an end to needless and expensive maintenance bills, are taking place in the new maintenance research laboratory at Pacific Intermountain Express' Oakland shop. First such installation in the trucking industry, the lab has as its prime investigation target the state and composition of lubricating oils removed at 15,000-mile intervals from each of P-I-E's 800 line haul units. Under analysis the oil reveals if abnormal wear is taking place, and if so, where.

The constant and exhaustive tests which may require two hours are used on an average of 90 oil samples daily. If an adverse factor shows up, it is reported so that corrective measures can be taken.

A mechanical wizard, the Spectrometer, tells unerringly the metal concentration—a danger signal—in the oil, while other methods measure amounts of dirt, viscosity, alkalinity and any possible fuel leakage.

Stopping trouble before it starts, the check-up system will greatly reduce two major problems—over-maintenance, which results in wasted materials and labor costs, and under-maintenance, which leads to road failures and delays, says P-I-E.

Western Branch Opened for Reich Rotary Drills

LOS ANGELES—A Western branch office at 1201 E. Eighth St. was established recently by Reich Bros. Mfg. Co., Inc., Terre Haute, Ind., designer and builder of rotary hydraulic drilling rigs and special machinery. Factory representative is Harlan K. Knudson, who will handle sales and service for Reich rotary drills.

Peterson to Distribute Sheffer Cylinders

SAN FRANCISCO—The Sheffer Corporation has named F. Somers Peterson Co. of this city and Los Angeles as distributor for Sheffer air and hydraulic cylinders in California, Arizona, and Nevada, according to an announcement from Don Sheffer, sales manager.

Sheffer manufactures one of the largest lines of industrial cylinders for both light duty and heavy duty pneumatic and hydraulic use.

C F & I Morgan Rod Mill Adds Double Cooling Bed

PUEBLO, COLO.—The Morgan Rod Mill of the Colorado Fuel & Iron Corp. has added a new double cooling bed. The new unit will enable the plant to produce straight bars.

Before installation of the new double cooling bed, the $\frac{1}{8}$ to $\frac{1}{2}$ -in. reinforcing bars were produced on the 10-in. mill. Production of these small bars will be switched to the rod mill, and the 10-in. mill will be completely given over to the production of the heavier sections.

Cusic Opens Diesel Repair Service Shop

MOUNTAIN VIEW, CALIF.—Cusic Pump & Injector Service has announced the opening of a specialized repair service for users of diesel equipment at 571 El Camino Real. Facilities include a controlled pressurized pump room and late design injection pump test and calibrat-

ing equipment.

Automotive gas injection systems will be handled as well as all types of diesel equipment, according to A. J. Cusic. A former instructor in diesel theory, Cusic has extensive practical diesel experience, including that on U. S. navy submarines.

Sales representative for the firm is John A. Lively.

Solar Aircraft and Norden Announce Merger Plans

SAN DIEGO—Solar Aircraft Co., and Norden-Ketay Corp., Stamford, Conn., electronic equipment manufacturer, recently announced plans for a merger, with the consolidation to be completed by May 1.

Solar is a major designer and manufacturer of aircraft and missile engine assemblies, small gas turbine engines, industrial expansion joints and other military and commercial items. Norden, which constructed the Norden bombsight, designs and builds complex electronic systems and instruments.

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Latrobe Steel Appoints Montebello Distributor

MONTEBELLO, CALIF.—Machinist's Tool & Supply Co. has been named a new distributor for tool bits and related products made by Latrobe Steel Co. of Latrobe, Pa. Located at 2827 Maple Ave., the distributor firm is headed by Robert A. Donovan. Among the products it will handle are underground tool bits, finish ground tool bits and bevel cut off blades, hand chisel blanks and hardened and ground rounds.

United Concrete Pipe's Plant Near Completion

AUBURN, WASH.—Nearing completion here is an addition to the plant of United Concrete Pipe Corp. The new facility, which will cost over \$1,000,000, will house production operations for steel and concrete pipe and will provide a cement mortar lining and coating service for other steel pipe manufacturers. United Concrete, a subsidiary of U. S. Pipe & Foundry Co., has headquarters at Baldwin Park, Calif.

Trojan Battery Co. Named to Handle KW Battery Line

LOS ANGELES—Trojan Battery Co., 724 E. 61st St., has been appointed a sales representative for the KW Battery Co., of Skokie, Ill. Trojan territory will be Southern California, Arizona and part of Nevada.

Bearing Sales & Service Opens Pasco Store

PASCO, WASH.—Bearing Sales & Service, Inc., Northwest industrial distributor of bearings and allied products, announced the opening of a new store here at 319 W. Clark St. Manager is Hal Huston, with Bill Ehlers in charge of inside sales.

The Pasco store, ninth in the firm's network of stores in Washington and Oregon, will maintain complete stocks

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... for more details, circle No. 92

of ball and roller bearings of all types, plus allied products, according to Martin H. Borgford, Seattle vice president of the firm.

He also said that the unit will be operated by personnel experienced in all phases of bearing application, installation and maintenance.

Yearsley Co. to Represent Polytechnic R & D in West

HOLLYWOOD, CALIF.—Polytechnic Research & Development Co., Inc., announces that it will be represented in Southern California and Arizona by the W.A.C.A. Yearsley Co. at 737-41 N. Seward St., former address of PRD's Western sales office which has been discontinued.

The J. K. Dolley Co., of Seattle, is the firm's representative in Washington, and Elton K. Kelley Co., Loveland, Colo., covers the states of Colorado, New Mexico, Idaho, Montana, Utah and Wyoming.

PT & T to Build \$3,250,000 Building in Palo Alto

PALO ALTO, CALIF.—Pacific Telephone & Telegraph Co. recently announced plans for a four-story, 58,000-sq. ft. building at 345 Hamilton Ave. Cost of construction plus equipment is estimated at \$3,250,000. Completion of the new facility, which will connect with an existing building of the company, is scheduled for the middle of next year.

WESTERNERS AT WORK . . .

Goodyear Tire & Rubber Co.

... in reorganizing its Western sales region (tires) has named M. T. Laughlin to head the district which has headquarters in Billings, Mont., with C. H. Sicklesteel as district operating manager. Laughlin has been district manager in Spokane since 1956 and Sicklesteel has managed the firm's car and home warehouse in Portland. The firm has also created an El Paso, Tex., district which will serve New Mexico, plus territory formerly handled out of Phoenix.

Hydraulic & Air Equipment Co.



E. M. Heth

... has named Edwin M. Heth (rhymes with teeth) chief engineer to work out of Portland on application surveys and job installation engineering in the Northwest area served by this company. Heth was formerly with E. V. Prentice Co., Portland, as chief engineer for three years, and before that spent nine years with Premier Gear & Machine Works, Portland.

Earle M. Jorgensen Co.



Lee Dellinger

... has named *Lee Dellinger*, general manager of its forge division to direct the firm's forging operations and sales. Dellinger has served the company in various capacities since joining it in 1951, after four years' association with Blue Diamond Corp.

General Electric Co.

... has selected *M. Randall Marstron, Jr.*, to succeed *Herbert A. Cordes* as manager of user industries sales department for the San Diego territory of its apparatus sales division. Cordes, associated with GE since 1919, will continue in a consultant status. Marstron joined the firm in 1939 and has been a sales engineer in San Diego since 1951.

Pacific Intermountain Express

... has transferred *S. D. Perez* from his duties as sales director for its Tanker division to the post of district sales manager, according to *S. A. Moore*, district manager. Perez joined the interstate carrier firm when it merged with West Coast Fast Freight.

York Corporation

... a subsidiary of Borg-Warner, has appointed *Christian J. Schurman* manager of its Pacific district, with headquarters at the Los Angeles office of the air conditioning and refrigeration manufacturing firm. Schurman has been with York since 1930 and in 1939 was appointed East Central district sales manager.

Hyster Company

... has selected *Richard P. Scales* to be field service representative in the Northwest states and Alaska. A Hyster employee for the last seven years, Scales in his new position will handle service liaison between Hyster and its dealers and will train dealer personnel on service and maintenance of Hyster equipment.

John A. Roebling's Sons Corp.

... has assigned *Calvin J. Kee* to represent its wire rope division in the southern Los Angeles area, which includes harbor areas of San Pedro, Wilmington and Long Beach. A California resident since 1953, Kee was assigned to his new position by *James C. Barney*, the division's Los Angeles district manager.

Ideal Cement Co.

... has several personnel changes of interest, resulting from Ideal's acquisition of Northwestern Portland Cement Co. last year. *Gordon Tongue*, formerly Northwestern's president, has been elected a director and vice president, Northwestern Division. *A. G. Stubblefield*, previously sales manager of Ideal's Montana Division, is now sales manager with offices in Seattle. *Frank Baldwin* will continue as plant superintendent at Grotto and *James Halloran* as quarry superintendent at Soda Springs, positions formerly held with Northwestern.

Truesdail Laboratories, Inc.

... announces that *F. Leslie Hart*, formerly head of the U. S. Food & Drug administration in Boston, has been appointed director of food and drug technology for the Los Angeles firm. Hart has also been chief chemist in the FDA Los Angeles office.

J. E. Haseltine Co.

... announces some major shifts in its managerial lineup for 1958 in which *James L. Haseltine* becomes general manager; *Glenn E. Wilson* moves to the post of assistant general manager, and *Bob Cooper*, former sales manager, is named special assistant to the general manager. *Gilbert Tucker*, previously field sales supervisor, is now industrial sales manager.

In addition this Portland mill-supply house has put two new men in the field to intensify its coverage of two expanded territories: *Ron Monda*, who has been in the company's warehouse and inside sales departments, is assigned to the western Washington area bounded by Olympia, Chehalis and Grays Harbor. The Oregon coast territory from Florence to Astoria has been assigned to *Len Younce*.

David Brown, Inc.



D. Nunamaker

... has a new engineering sales representative for its gear division in the Pacific Northwest territory. He is *Dale Nunamaker*, who will be based at the new factory branch office, 1224 SW Morrison St., Portland. A native of that area, Nunamaker has had wide experience in the material handling and power transmission fields.

Farr Company

... has announced *Gordon F. Thruelsen*'s appointment as general sales manager of the Los Angeles firm. Formerly general manager of Dust Control, Inc., a Farr Co. subsidiary and Southern California sales and filter service representative, Thruelsen will be in charge of all marketing operations for the commercial, industrial, railroad and electronic sales divisions.

Burgmaster Corp.

... has appointed *Edward G. Merk* as national sales manager to direct sales policies, work with distributors and supervise promotion for Burgmaster's new bench model turret drill. Merk has been vice president in charge of sales for Benchmaster Corp. during the last seven years.

Pabco Floor Covering Division

... of Fibreboard Paper Products Corp., has promoted *Frank M. Isola* to the post of general manager. Most recently manufacturing manager for the division, Isola began his career with the firm in 1934 at its Emeryville plant. His offices will be at division headquarters, 475 Brannan St., San Francisco.

General Electric Supply Co.

... has transferred *V. S. Cooper* to San Francisco where he will be district manager, succeeding *C. W. Goodwin, Jr.*, now district consultant for GESCO. Cooper was formerly regional manager at Nashville, Tenn., and district manager in Los Angeles.

"Automatic" Sprinkler Corp. of America

... has named *J. J. Durkin* as Seattle district manager, with headquarters at 610 W. Idaho St. A contracting engineer since 1946 for the firm, which makes fire protection systems and components, he moves to Seattle from New York City.

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Denver Equipment Co.

... has selected *James A. Nissen*, a former DECO dealer, to be its general sales manager, according to word from *W. T. Ahlborg*, executive vice president and general manager. President of the James A. Nissen Co., which he organized in 1948, Nissen has been associated with the mining, milling, mill design and construction fields for many years. He has also been associated with Western Machinery Co., Western Pipe and Steel and other firms.

Darcoid Co. of California

... has announced that *Carroll E. Boux* has joined its inside sales staff. Formerly with Gates Rubber Co. in Denver, Boux will provide technical assistance on Gates products.

The Adam-Hill Co.

... reports that *Calvin Tabucci* has been named a salesman at the firm's San Jose branch. He will sell all lines of power transmission equipment, accessories and supplies.

White Motor Co.

... has assigned *Herman H. Mesick* to be manager of its Southern California - Arizona wholesale territory, with headquarters at the firm's Los Angeles branch office. A veteran of 24 years in the trucking industry, Mesick joined White two years ago and recently has been in the Cleveland office as assistant to the vice-president in charge of sales.

Zinsco Electrical Products

... has announced appointment of *James Land, Jr.* as sales manager of its Northern California division. His headquarters will be at 1841 Adeline St., Oakland.

ADVERTISERS

in the March 1958
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ABRASIVES	1137 —
INDUSTRIAL SUPPLIES	7050 —

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SALARIES AND WAGES

STOCK KEEPERS	500 —
INVENTORY CLERKS	357 —

123(1) —

BUILDING COSTS

FLOOR SPACE USED	1300 —
HEAT, LIGHT, POWER	73 —
JANITORIAL	155 —
DEPRECIATION	75 —

5017 —

INVENTORY COSTS

INTEREST & INVENTORY	103 —
INVESTMENT	
OBSOLESCENCE	710 —

707 —

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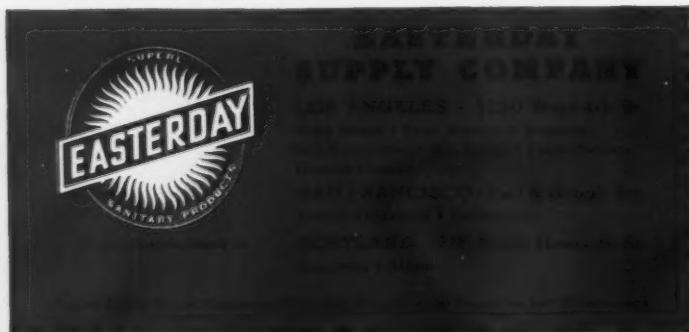
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